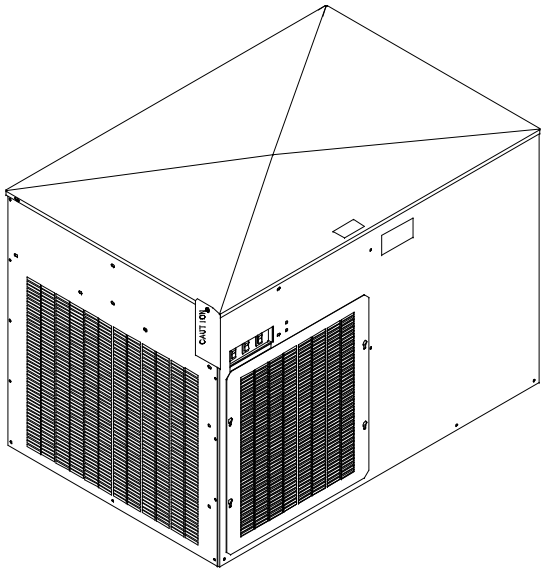
AURORA® 10,000 PLUS COOLING UNIT

(R-404A REFRIGERANT)

Installation/Service Manual



IMPORTANT:

TO THE INSTALLER.

It is the responsibility of the Installer to ensure that the water supply to the dispensing equipment is provided with protection against backflow by an air gap as defined in ANSI/ASME A112. 1.2-1979; or an approved vacuum breaker or other such method as proved effective by test.

Water pipe connections and fixtures directly connected to a potable water supply shall be sized, installed, and maintained according to Federal, State, and Local codes.

Part No. 312022000
January 24, 1996
Revised January 13, 1998
Control Code A–B

THIS DOCUMENT CONTAINS IMPORTANT INFORMATION
This Manual must be read and understood before installing or operating this equipment

Ó IMI CORNELIUS INC; 1996–98

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SAFETY INFORMATION

Recognize Safety Information

This is the safety-alert symbol. When you see this symbol on our machine or in this manual, be alert to the potentially of personal injury.

Follow recommended precautions and safe operating practices.

Understand Signal Words

A signal word - ***DANGER, WARNING,*** *OR* ***CAUTION*** is used with the safety-alert symbol. ***DANGER*** identifies the most serious hazards.

Safety signs with signal word ***DANGER*** or ***WARNING*** are typically near specific hazards.

General precautions are listed on ***CAUTION*** safety signs. ***CAUTION*** also calls attention to safety messages in this manual.

Follow Safety Instructions

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Learn how to operate the machine and how to use the controls properly. Do not let anyone operate the machine without instructions. Keep your machine in proper working condition. Unauthorized modifications to the machine may impair function and/or safety and affect the machine life.

CO_2 (Carbon Dioxide) Warning

CO_2 Displaces Oxygen. Strict Attention *must* be observed in the prevention of CO_2 (carbon dioxide) gas leaks in the entire CO_2 and soft drink system. If a CO_2 gas leak is suspected, particularly in a small area, *immediately* ventilate the contaminated area before attempting to repair the leak. Personnel exposed to high concentration of CO_2 gas will experience tremors which are followed rapidly by loss of consciousness and suffocation.

Shipping, Storing, Or Relocating Unit

CAUTION: Before shipping, storing, or relocating this Unit, the syrup systems must be sanitized and all sanitizing solution *must* be purged from the syrup systems. All water *must* also be purged from the plain and carbonated water systems. A freezing ambient temperature will cause residual water remaining inside the Unit to freeze resulting in damage to internal components of the Unit.

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GENERAL INFORMATION

IMPORTANT: *To the user of this manual* - This manual is a guide for installing, operating, and maintaining this equipment. Refer to Table of Contents for page location of detailed information pertaining to questions that arise during installation, operation, service and maintenance, or troubleshooting this equipment.

GENERAL DESCRIPTION

This section gives the description, theory of operation, and design data for the Aurora® 10,000 Plus Cooling Unit, hereafter referred to as a Cooling Unit.

This Unit must be installed and serviced by a qualified Service Person. This Unit contains no user serviceable parts.

COOLING UNIT DESCRIPTION

The Cooling Unit is designed to provide cooled soft drink syrup, carbonated water, and plain water to a dispensing station through an insulated python (length as ordered). On the standard Cooling Unit, the refrigeration system is cooled by a condenser coil and a fan assembly located inside the Cooling Unit. The other Cooling Units not provided with an internal condenser coil and fan assembly to cool their refrigeration systems are cooled by either a Remote Condenser Coil and Fan Assembly which is connected to the Cooling Unit or the Cooling Unit refrigeration system is cooled by a Refrigeration Cooling Coil Assembly with city plain water circulating through the coil.

The Cooling Unit consists of a refrigeration system with a two horsepower compressor and a Hydro Boost® (plain water pre-cooler) which pre-cools plain water on its way to the carbonated water tank. The Cooling Unit also consists of a plain water pump. The plain water pump pumps plain water through the Hydro Boost®, through the plain water cooling coils, and into the carbonated water tank. The carbonated water circulating pump circulates cold carbonated water from the Cooling unit to the dispensing station and back to the Cooling Unit.

The cabinet panels are easily removed to facilitate installation and service and maintenance. An optional Cooling Unit Stand (P/N 309309000) is available to elevate the Cooling Unit up off the floor. Also available is a Service System Analyzer (P/N 309197000) that may be used to analyze and troubleshoot the Aurora®10,000 Plus Cooling Unit refrigeration system.

CAUTION: Before shipping, storing, or relocating this Unit, the syrup systems *must* be sanitized and all sanitizing solution *must* be purged from the syrup systems. All water *must* also be purged from the plain and carbonated water systems. A freezing ambient environment will cause residual water in the Unit to freeze resulting in damage to internal components.

WARRANTY REFERENCE INFORMATION

Warranty Registration Date (to be filled out by customer)
Unit Part Number:
Serial Number:
Install Date:
Local Authorized Service Center:

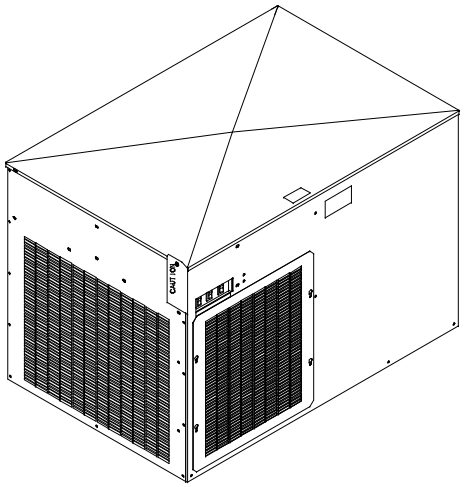

FIGURE 1. AURORA® 10,000 PLUS COOLING UNIT

Table 1. Design Data	
COOLING UNIT DATA	
Cooling Unit Part Numbers;	
60 HZ UNIT:	
Standard (air-cooled) Cooling Unit Equipped with Internal Condenser Coil and Fan Assembly.	4002
Cooling Unit (water-cooled) Equipped With Water-Cooled Condenser	561400006
Cooling Unit Requiring Connection to a Remote Condenser Coil and Fan Assembly.	4004
50 HZ UNIT:	
Standard (air-cooled) Cooling Unit with Internal Condenser Coil and Fan Assembly.	4003
Cooling Unit (water-cooled) Equipped With Water-Cooled Condenser	561400007
Cooling Unit Requiring Connection to a Remote Condenser Coil and Fan Assembly.	4005
Overall Dimensions:	
Height	25-inches
Width	36-1/2 inches
Depth	24-1/2 inches
NOTE:Overall dimensions if Cooling Unit is placed on optional Cooling Unit Stand (P/N 309309069).	
Height (approximate)	72-5/16 inches
Width	37-1/2 inches
Depth	25-3/8 inches
Weights:	
Shipping	385 pounds
Dry Weight	360 pounds
Ice Bank Weight	40 pounds
Capacities:	
Water Bath (no ice bank)	18 gallons

Table 1. Design Data (cont'd)	
Compressor Capacity (ARI Rating)	15,000 BTUH
Refrigeration System:	
Refrigerant Type and Charge	See Cooling Unit Nameplate
Ambient Operating Temperature	50°F to 100°F
Electrical Requirements:	
60 HZ Cooling Units:	
Operating Voltage and Current Draw	See Cooling Unit Nameplate
50 HZ Cooling Units:	
Operating Voltage and Current Draw	See Cooling Unit Nameplate
REMOTE CONDENSER COIL AND FAN ASS'Y DATA (P/N 4000)	
Overall Dimensions:	
Height	32 inches
Width	22 inches
Depth	38 inches
Weight:	
Shipping	85 pounds
Ambient Operating Temp.	-22°F to 158°F
Electrical Requirements:	
Operating Voltage	208/230VAC, Single Phase, 50/60Hz
Current Draw	2.5 Amps

REFRIGERATION SYSTEMS

STANDARD (AIR-COOLED) COOLING UNIT

(see Figure 8)

The standard (air-cooled) Cooling Unit refrigeration system is cooled by a condenser coil and fan assembly located inside the Cooling Unit.

"WATER-COOLED" COOLING UNIT

(see Figure 9)

The "water-cooled" Cooling Unit refrigeration system is equipped with a Refrigeration Cooling Coil Assembly that contains both refrigerant and plain water cooling coils. Circulating cool plain water through the cooling coils cools the refrigerant inside the coil. During installation, City cold plain water is connected to the cooling coil water inlet labeled "CONDENSER WATER IN". The water drain line labeled "CONDENSER WATER OUT" *must* be routed to and be connected to a permanent drain.

COOLING UNIT REQUIRING CONNECTION TO A REMOTE CONDENSER COIL AND FAN ASS'Y

(see Figure 9)

NOTE: The Remote Condenser Coil and Fan Assembly (P/N 4000) is a 208/230 VAC, 50/60 HZ Unit that may be used with either Cooling Units (P/N 4004, a 60 HZ Unit) or (P/N 4005, a 50 HZ Unit) which require connection to a Remote Condenser Coil and Fan Assembly.

The Cooling Unit refrigeration system is cooled by a Remote Condenser Coil and Fan Assembly (P/N 4000) that is authorized by IMI Cornelius Inc. *Use of any other Remote Condenser Coil and Fan Assembly must be authorized by IMI Cornelius Inc. Use of an unauthorized Remote Condenser Coil and Fan Assembly will automatically void the Cooling Unit factory warranty.*

SYSTEM THEORY OF OPERATION

(see Figure 2)

A CO_2 cylinder delivers carbon dioxide gas (CO_2) to a primary CO_2 regulator assembly which delivers regulated CO_2 gas to adjustable secondary CO_2 regulators. The secondary CO_2 regulators delivers regulated CO_2 gas to the carbonated water tank inside the Cooling Unit and also to the soft drink tanks. Plain water enters the Cooling Unit and is pumped through and is pre-cooled by the refrigerated Hydro Boost® coil. Cooled water continues on through the plain water cooling coils and on into the carbonated water tank. Cold plain water entering the carbonated water tank is carbonated by regulated CO_2 gas pressure also entering the tank. Carbonated water leaves the carbonated water tank and enters the inlet side of the carbonated water circulating pump. Carbonated water passes through the carbonated water circulating pump, through the carbonated water cooling coil, and exits the Cooling Unit through an insulated python to a turnaround inside the dispensing station. Carbonated water returns to the Cooling Unit by passing through the insulated python, through the Cooling Unit carbonated water cooling coils, through the carbonated water tank which makes up the carbonated water circulating system. As carbonated water is being dispensed from the dispensing station, the carbonated water circulating system is continuously being replenished from the carbonated water tank. The regulated CO_2 gas pressure, exerted upon soft drink tanks contents, forces syrup from the tanks, through the Cooling Unit cooling coils, and on to the dispensing station through the insulated python lines.

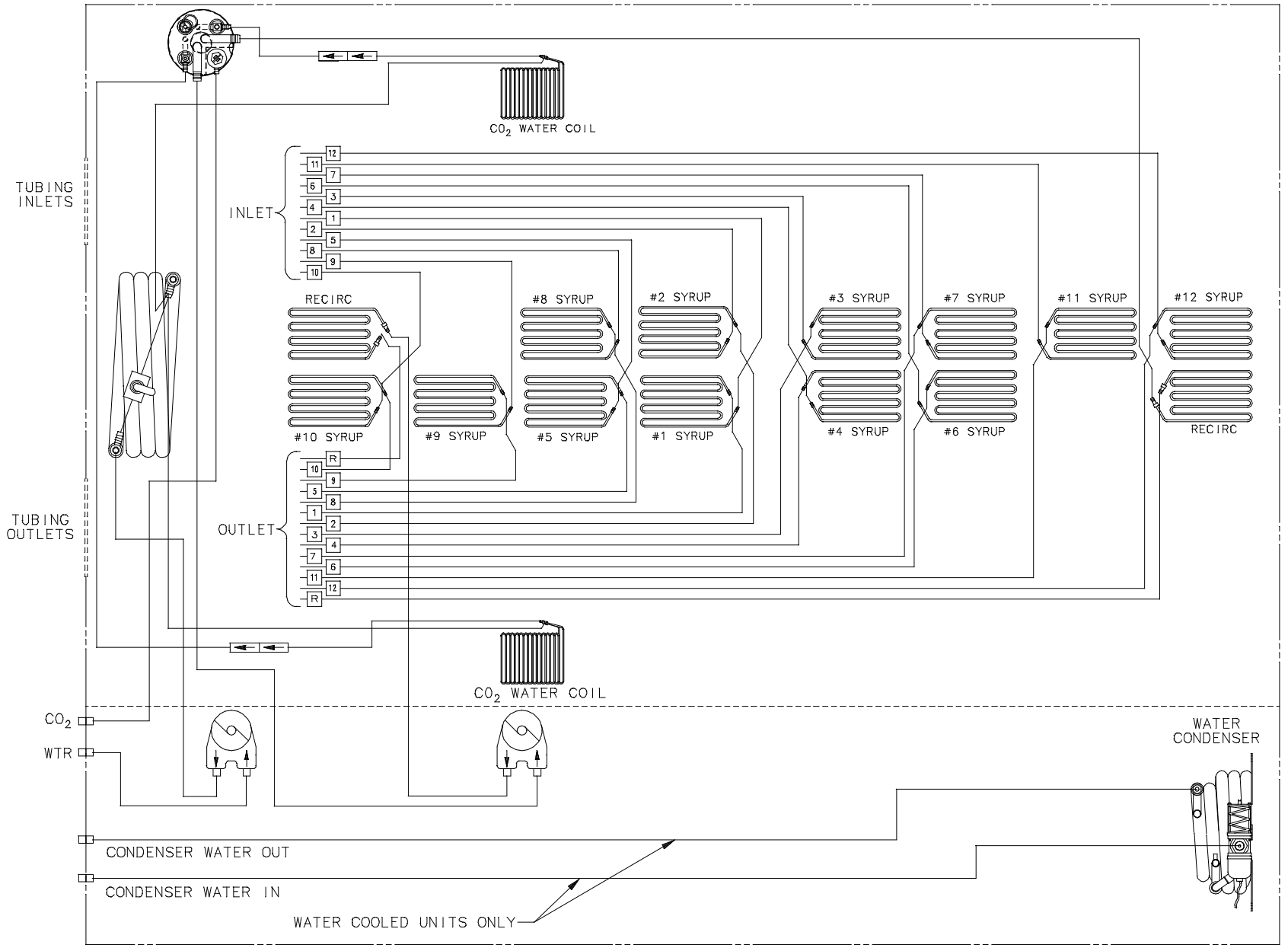

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FIGURE 2. FLOW DIAGRAM (TYPICAL INSTALLATION FOR PRODUCT CONNECTION)

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INSTALLATION

This section covers unpacking and inspection, selecting location, installing the Cooling Unit, preparing for operation, and operation.

UNPACKING AND INSPECTION

NOTE: The Cooling Unit was thoroughly inspected before leaving the factory and the carrier has accepted and signed for it. Any damage or irregularities should be noted at time of delivery (or not later than 15 days from date of delivery) and immediately reported to the delivering carrier. Request a written inspection report from Claims Inspector to substantiate any necessary claim. File claim with the delivering carrier, not with IMI Cornelius Inc.

1. After Cooling Unit has been unpacked, remove shipping tape and other packing material.
2. Unpack LOOSE-SHIPPED PARTS. Make sure all items are present and in good condition.

Table 2. Loose-Shipped Parts

Item No.	Part No.	Name	Qty.
1	309852000	Tubing Clamp	24
2	770407	Barbed Connector, 1/4 by 3/8	12
3	770424	Barbed Connector, 1/2 by 1/2	2
4	311962000	Label, Line Identification	1
NOTE: The following Remote Condenser Coil and Fan Assembly and Refrigeration Lines Kits are recommended for use with Cooling Units (Part numbers 4004 and 4005). Refrigeration Lines Kit (as ordered) is used to connect the Remote Condenser Coil and Fan Assembly to the Cooling Unit.			
5	4000	Remote Condenser Coil and Fan Assy	1
6	301115025	Refrigeration Line Kit, 25-ft. long, 90°	1
	301115050	Refrigeration Line Kit, 50-ft. long, 90°	1

IDENTIFICATION OF LOOSE-SHIPPED PARTS

1. BARBED CONNECTORS (item 2) used to connect Cooling Unit outlet lines to insulated python lines. Connections are secured with TUBING CLAMPS (item 1).
2. BARBED CONNECTORS (item 3) are used to connect Cooling Unit outlet carbonated water lines to insulated python lines.
3. LABEL, LINE IDENTIFICATION (item 4) to be installed on Cooling Unit and syrup flavors to be recorded in proper spaces on label.
4. REFRIGERATION LINE KIT (items 6) is used to connect REMOTE CONDENSER COIL AND FAN ASSY (item 5) to Cooling Unit.

SELECTING LOCATION

COOLING UNIT

CAUTION: This Unit is intended for indoor installation *only*. *Do not* install this Unit in an outdoor environment which would expose it to the outside elements.

Locate the Cooling Unit so the following requirements are satisfied.

1. Allow the shortest possible insulated python route from the Cooling Unit to the Dispensing Station location.
2. **Cooling Unit Requiring Connection to a Remote Rooftop Condenser Coil and Fan Assembly**.

   Allow the shortest possible refrigeration lines (not to exceed 50-feet in length) route from the Remote Condenser Coil and Fan Assembly to the Cooling Unit.
3. *REFER TO COOLING UNIT NAMEPLATE FOR THE REQUIRED POWER CIRCUIT OPERATING VOLTAGE, HERTZ, AND THE MINIMUM CIRCUIT AMPACITY OF THE COOLING UNIT.*
   The power circuit for the Cooling Unit *must* be wired through a 40-amp (minimum) rated disconnect switch (not provided) and the power circuit *must* be fused as indicated on the Unit nameplate. The power circuit may also be wired through an equivalent HACR type circuit breaker rather then through a disconnect switch. THE POWER CIRCUIT *MUST* BE MADE UP OF COPPER CONDUCTORS AND ALL WIRING *MUST* CONFORM TO NATIONAL AND LOCAL ELECTRICAL CODES.
4. The Cooling Unit *must* be located close to a plain water source supply line with requirements as specified under CONNECTING CITY PLAIN WATER SOURCE LINE TO THE COOLING UNIT in this section of the manual.
5. **Water-Cooled Cooling Unit.**

   The water-cooled Cooling Unit refrigeration system requires that a 1/2-inch I.D. (minimum) City plain water source line with a minimum pressure of 12-psi be available to connect to the Cooling Unit Refrigeration Cooling Coil Assembly.
6. The Cooling Unit *must* be close to a permanent drain to route the Cooling Unit water tank drain and overflow hoses, and the Refrigeration Cooling Coil Assembly water dump line if a Water-Cooled Cooling Unit.
7. Allow sufficient space around the Cooling Unit for proper air circulation (18-inches on sides and back, front side open to the room, and top open to the ceiling.

REMOTE ROOFTOP CONDENSER COIL AND FAN ASS'Y

NOTE: The Remote Condenser Coil and Fan Assembly (P/N 4000) is a 208/230 VAC, 50/60 HZ Unit that may be used with either Cooling Unit (P/N 4004, a 60 HZ Unit) or (P/N 4005, a 50 HZ Unit) which requires connection to a Remote Condenser Coil and Fan Assembly.

The Cooling Unit refrigeration systems of Cooling Units (P/N 4004) and (P/N 4005) *must* be connected to a Remote Condenser Coil and Fan Assembly (P/N 4000) that is authorized by IMI Cornelius Inc. Use of any other Remote Condenser Coil and Fan Assembly *must* be authorized by IMI Cornelius Inc. Use of an unauthorized Remote Condenser Coil and Fan Assembly will automatically void the Cooling Units factory warranty.

An extreme warm climate installation may require extra caution in the Remote Condenser Coil and Fan Assembly location. Avoid hot sunny locations and seek a shaded area if possible. The use of a structure to shade the Unit from direct sun exposure and/or a platform extending the Unit an additional 18-inches above the rooftop is highly recommended and will improve performance. Ample space must be provided on all sides and above the Unit for proper air circulation through the Unit and also access for service and maintenance. *DO NOT BLOCK AIR CIRCULATION THROUGH THE UNIT.*

INSTALLATION

PLACING COOLING UNIT IN LOCATION

The Cooling Unit *must* be installed meeting requirements of SELECTING LOCATION as follows:

NOTE: The Cooling Unit inlet and outlet lines, power cables, and the Remote Condenser Coil and Fan Assembly refrigeration lines (if applicable) *must* be long enough when connected to the Cooling Unit to allow pulling the Unit out approximately 36-inches from the operating location for service and maintenance. When Cooling Unit is in the operating location, the excess inlet and outlet lines, power cables, and the refrigeration lines may be coiled up behind the Cooling Unit.

NOTE: An optional Cooling Unit Stand (P/N 309309069) is available to elevate the Cooling Unit up and off the floor.

1. Place Cooling Unit in location approximately 36-inches out from operating location to allow access all around the Unit.
2. Remove four screws securing the Cooling Unit top cover, then remove the cover.

PLACING REMOTE CONDENSER COIL AND FAN ASS'Y (IF APPLICABLE) IN LOCATION

(see Figure 5)

The Remote Condenser Coil and Fan Assembly *must* be installed meeting requirements of SELECTING LOCATION. The Remote Condenser Coil and Fan Assembly *must* be installed in a level position and must be anchored to the rooftop with adequate fastening devices.

1. The Remote Condenser Coil and Fan Assembly *must* be installed meeting requirements of SELECTING LOCATION. Install the Remote Condenser Coil and Fan Assembly in a level position. Make sure the Remote Condenser Coil and Fan Assembly is anchored to the rooftop with adequate fastening devices.
2. Route refrigeration lines of REFRIGERATION LINE KIT (item 6) from Remote Condenser Coil and Fan Assembly down to the Cooling Unit location.
3. Connect ends of the refrigeration lines to the Remote Condenser Coil and Fan Assembly refrigeration connectors.

CONNECTING REMOTE CONDENSER COIL AND FAN ASS'Y (IF APPLICABLE) REFRIGERATION LINES TO COOLING UNIT

(see Figure 5)

Connect refrigeration lines, from the Remote Condenser Coil and Fan Assembly, to the refrigeration connectors on back of the Cooling Unit.

CONNECTING ELECTRICAL POWER CIRCUIT TO COOLING UNIT

(see applicable Figure 4 or 5 and applicable10 or 11)

WARNING: Make sure 40-amp minimum-rated disconnect switch (not provided) is in "OFF" position.

1. Remove cover from electrical handy box on back of Cooling Unit.

WARNING: The Cooling Unit must be electrically grounded to avoid possible fatal electrical shock or serious injury to the operator. A green ground wire is provided inside electrical box to connect power circuit ground wire which electrically grounds the Cooling Unit.

2. **60 HZ Cooling Unit.**

   Connect (Refer to Cooling Unit nameplate for power circuit requirements) power circuit from 40-amp minimum rated disconnect switch (not provided) fused at 40-amps (maximum) with GFCI or circuit connected through an equivalent HACR circuit breaker with GFCI to electrical wires inside the electrical handy box on back of the Cooling Unit. *THE COOLING UNIT MUST BE PROPERLY GROUNDED. THE POWER CIRCUIT MUST BE MADE UP OF COPPER CONDUCTORS, AND ALL WIRING MUST CONFORM TO NATIONAL AND LOCAL ELECTRICAL CODES. DO NOT CONNECT ELECTRICAL POWER TO THE COOLING UNIT AT THIS TIME.*

3. **50 HZ Cooling Unit.**

Connect (Refer to Cooling Unit nameplate for power circuit requirements) power circuit from a 40-amp minimum rated disconnect switch (not provided) fused at 40-amps (maximum) with ELCB to terminals wires inside of the Cooling Unit. *COOLING UNIT MUST BE PROPERLY GROUNDED AND POWER CIRCUIT MUST BE MADE UP OF COPPER CONDUCTORS.*

DO NOT CONNECT ELECTRICAL POWER TO COOLING UNIT AT THIS TIME.

CONNECTING ELECTRICAL POWER CIRCUIT TO REMOTE CONDENSER COIL AND FAN ASS'Y

(see Figures 5 and 11)

NOTE: Electrical power circuit may be connected to the Remote Condenser Coil and Fan Assembly (P/N 4000) in two ways. The preferred way is to draw electrical power from the Cooling Unit contactor which allows the Remote Condenser Coil and Fan Assembly to operate only when the Cooling Unit refrigeration system is operating. The optional way is to connect a separate electrical power circuit (independent of the Cooling Unit) through an appropriately rated and fused disconnect switch or an equivalent HACR circuit breaker which allows the Remote Condenser Coil and Fan Assembly to operate at all times (independent of Cooling Unit operation).

A. Connect and route electrical power circuit cable from Remote Condenser Coil and Fan Assembly through fuse box (not provided), fused at 15-amps ("slow-blow") down to Cooling Unit location. THE REMOTE CONDENSER COIL AND FAN ASSEMBLY MUST BE PROPERLY GROUNDED, THE POWER CIRCUIT MUST BE MADE UP OF COPPER CONDUCTORS, AND ALL WIRING MUST CONFORM TO NATIONAL AND LOCAL ELECTRICAL CODES

B. Route Remote Condenser Coil and Fan Assembly Power cable electrical wires through electrical handy box on back of the Cooling Unit to inside of the electrical control box.

C. Connect Remote Condenser Coil and Fan Assembly power cable electrical wires to T_1 and T_2 terminals on contactor inside Cooling Unit electrical control box.

D. Install electrical control box cover and secure with four screws.

E. Install cover on electrical handy box on back of Cooling Unit.

CONNECTING CITY PLAIN WATER SOURCE LINE TO COOLING UNIT

(see Figure 2)

Connecting City Plain Water Source Line to Unit Post-Mix System.

NOTE: IMI Cornelius Inc. recommends that a water shutoff valve be installed in the City plain water source line to be connected to the Cooling Unit and that the water supply be filtered. THE WATER PIPE CONNECTIONS AND FIXTURES DIRECTLY CONNECTED TO A POTABLE WATER SUPPLY SHALL BE SIZED, INSTALLED AND MAINTAINED ACCORDING TO FEDERAL, STATE, AND LOCAL LAWS.

CAUTION: The plain water inlet supply line to Cooling Unit must be 1/2-inch I.D. minimum. Check water flow rate of water inlet supply line. MINIMUM FLOW RATE MUST BE AT LEAST 300-GALLONS PER HOUR. If flow rate is less than 300-gallons per hour, "starving" of carbonator water pump will occur. Starving will allow water pump to overheat causing safety thermostat on pump outlet to disrupt electrical power to and stop water pump motor. Carbonated water circulating pump overheating could occur if water inlet supply line flow rate drops below 300-gallons per hour. INCOMING PLAIN WATER INLET SUPPLY LINE WATER PRESSURE MUST NOT EXCEED 45 PSIG.

1. Before connecting City plain water source line to the Cooling Unit, open the water line shutoff valve for a period of time to flush out any metal shavings and other contaminates that may have resulted from plumbing connections.

2. Connect flexible plain water inlet supply line (1/2-inch I.D. min.), meeting water inlet supply line requirements of preceding CAUTION note, to the Cooling Unit 3/8-in. flare (5/8-18) bulkhead fitting on back of the Unit labeled "WATER INLET" Seal connection with a tapered gasket. *DO NOT OPEN WATER INLET SUPPLY LINE SHUTOFF VALVE AT THIS TIME.*

Connecting City Plain Water Source Line to Cooling Unit with Water-Cooled Refrigeration System.

NOTE: IMI Cornelius Inc. recommends that a water shutoff valve be installed in the City plain water source line to be connected to the Cooling Unit refrigeration cooling coil. THE WATER PIPE CONNECTIONS AND FIXTURES DIRECTLY CONNECTED TO THE WATER SUPPLY SHALL BE SIZED, INSTALLED AND MAINTAINED ACCORDING TO FEDERAL, STATE, AND LOCAL LAWS.

1. Connect flexible plain water inlet supply line (1/2-inch I.D. min.), meeting water inlet supply line requirements of preceding NOTE, to Cooling Unit refrigeration cooling coil 3/8-in. male flare (5/8-18) bulkhead fitting on back of the Cooling Unit labeled "CONDENSER WATER IN" Seal connection with a tapered gasket. *DO NOT OPEN WATER INLET SUPPLY LINE SHUTOFF VALVE AT THIS TIME.*

2. Connect a water drain line (1/2-inch I.D. min.) to the Cooling Unit refrigeration cooling coil 3/8-in. male flare (5/8-18) bulkhead fitting on back of the Unit labeled "CONDENSER WATER OUT". Seal connection with a tapered gasket.

CONNECTING CO_2 INLET SUPPLY LINE TO COOLING UNIT

(see Figure 2)

WARNING: CO_2 displaces oxygen. Strict attention *must* be observed in the prevention of CO_2 (carbon dioxide) gas leaks in the entire CO_2 and soft drink system. If a CO_2 gas leak is suspected, particularly in a small area, *immediately* ventilate the contaminated area before attempting to repair the leak. Personnel exposed to high concentration of CO_2 gas will experience tremors which are followed rapidly by loss of consciousness and suffocation.

Connect a flexible CO_2 inlet supply line to the Cooling Unit 1/4-in. flare (7/16-20) bulkhead fitting of back of the Unit labeled "CO_2 INLET". Seal connection with a tapered gasket. *DO NOT TURN ON CO_2 SUPPLY TO COOLING UNIT AT THIS TIME.*

CONNECTING SYRUP SOURCE LINES TO COOLING UNIT SYRUP INLET LINES

(see Figure 2)

Connect syrup source lines, from No. 1 through No. 10 soft drink tanks location, to Cooling Unit syrup inlet lines labeled No. 1 through No. 10. *DO NOT CONNECT SOFT DRINK TANKS INTO SYRUP SYSTEMS AT THIS TIME.*

CONNECTING COOLING UNIT SYRUP OUTLET LINES TO INSULATED PYTHON SYRUP LINES

(see Figure 2)

Connect Cooling Unit syrup outlet lines labeled No. 1 through No. 10, to insulated python lines labeled No. 1 though No. 10 using BARBED CONNECTORS (item 2). Secure connections with TUBING CLAMPS (item 1).

CONNECTING COOLING UNIT PLAIN WATER OUTLET LINES TO INSULATED PYTHON PLAIN WATER LINES

(see Figure 2)

Connect Cooling Unit plain water outlet lines to insulated python plain water lines using BARBED CONNECTORS (item 2). Secure connections with TUBING CLAMPS (item 1).

CONNECTING COOLING UNIT CARBONATED WATER OUTLET LINES TO INSULATED PYTHON CARBONATED WATER LINES

(see Figure 2)

NOTE: The Cooling Unit carbonated water outlet lines are used to make up the carbonated water circulating system between the Cooling Unit and the Dispensing Station as explained in SYSTEM THEORY OF OPERATION in the GENERAL INFORMATION section of this manual.

Connect Cooling Unit carbonated water outlet lines to insulated python carbonated water lines using BARBED CONNECTORS (item 3).

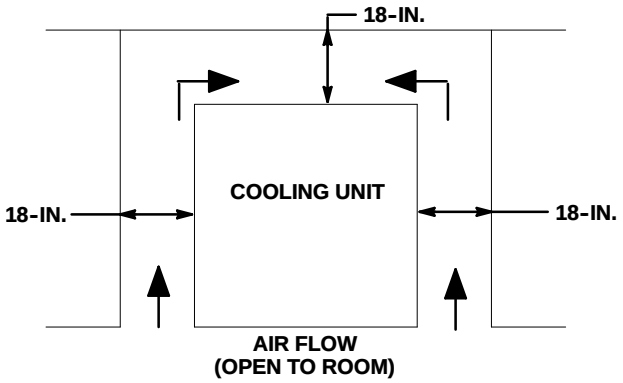

FIGURE 3. COOLING UNIT SPACE REQUIRED

PLACING COOLING UNIT IN OPERATING POSITION

1. Very carefully, move Cooling Unit back into operating location leaving space around Unit (see Figure 3) as specified in SELECTING LOCATION. *MAKE SURE THERE ARE NO KINKS IN COOLING UNIT INLET LINES, AND (IF APPLICABLE) REMOTE ROOFTOP CONDENSER AND FAN ASSEMBLY REFRIGERATION LINES.*

NOTE: To comply with National Sanitation Foundation (NSF) requirements, the Cooling Unit not installed on an optional Cooling Unit Stand (P/N 309309069) *must* have its base sealed to the floor with Dow-Corning RTV 731 or equivalent.

2. Tilt Cooling Unit up to expose bottom of the Unit base.

3. Liberally apply silastic sealant such as Dow-Corning (RTV 731) or equivalent on the Unit base bottom edges.

NOTE: Do not move Cooling Unit after positioning or seal from the Unit base to the floor will be broken.

4. Lower Cooling Unit into operating location to complete seal from Unit base to the floor. Apply additional sealant around bottom of the base. The seal must have a minimum radius of 1/2-inch to prevent cracks and crevices and to ensure a complete seal.

5. Route Cooling Unit water tank overflow hose to a permanent floor drain.

6. **Cooling Unit with Water-Cooled Refrigeration System**.
   Route end of the Cooling Unit refrigeration cooling coil drain line to and connect to a permanent drain.

7. Seal area around drain and overflow hoses where they exit from the Unit using Dow Corning (RTV 731) or equivalent.

PREPARING COOLING UNIT FOR OPERATION

1. Make sure plug in end of the Cooling Unit water tank drain hose is secure.

2. Fill water tank with clean water until water starts flowing from the water tank overflow hose. USE LOW MINERAL CONTENT WATER WHERE A LOCAL WATER PROBLEM EXISTS.

3. Open shutoff valve in the plain water inlet supply line. Check for water leaks and repair if evident.

4. Adjust primary CO_2 regulator (see Figure 2) on CO_2 cylinder to a minimum nominal setting of 120-psi or 24-psi higher than highest setting required by the secondary CO_2 regulators. Loosen the CO_2 regulator adjusting screw locknut. Turn the adjusting screw to the right (clockwise) until the regulator gage registers nominal 120-psi, then tighten the adjusting screw locknut.

5. Adjust the carbonator secondary CO_2 regulator (see Figure 2) to a nominal 90-psi. Loosen the CO_2 regulator adjusting screw locknut. Turn the adjusting screw to the right (clockwise) until the regulator gage registers nominal 90-psi, then tighten the adjusting screw lock nut. CO_2 PRESSURE TO THE CARBONATORS *MUST* NOT EXCEED 120-PSIG.

OPERATION

WARNING: Disconnect electrical power to Cooling Unit and Remote Condenser Coil and Fan Assembly to prevent personal injury before attempting any Cooling Unit or Remote Condenser Coil and Fan Assembly internal maintenance. Only qualified personnel should service internal components or electrical wiring.

CAUTION: To prevent Hydro-Boost® coil freeze-up during initial Cooling Unit start-up, the following start-up procedure *must* be performed as follows:

1. Make sure the Hydro Boost® bypass shutoff valve inside the Cooling Unit (see Figure 2) is in the "CLOSED" (handle not in line with tubing) position.

2. Open shutoff valve in the city plain water source line connected to the Cooling Unit post-mix system.

3. Make sure the Cooling Unit REFRIGERATION POWER, CARBONATOR MOTOR, and CIRCULATING MOTOR Power switches are in the "OFF" positions.

4. **Cooling Unit with Water-Cooled Refrigeration System**.
   Open shutoff valve in the City water line connected to the Refrigeration Cooling Coil Assembly. Check for water leaks and repair if evident.

5. Connect electrical power to the Cooling Unit at the disconnect switch.

6. **Cooling Unit Connected to a Remote Condenser Coil and Fan Assembly.**

   Connect electrical power to Remote Condenser Coil and Fan Assembly at disconnect switch.

7. **Cooling Unit with Water-Cooled Refrigeration System**.

IMPORTANT NOTICE

Water flow rate through the refrigeration cooling coil varies due to pressure change on the high side of the refrigeration compressor which influences opening and closing of the variable water regulator (see Figure 9). The variable water regulator must be adjusted to maintain 240-psi refrigeration high-side pressure.

Adjust the variable water regulator (see Figure 9) to maintain 240-psi refrigeration high-side pressure as instructed in the SERVICE AND MAINTENANCE section of this manual.

8. Place the CARBONATOR MOTOR power switch in the "ON" position.

9. Place the REFRIGERATION power switch in the "ON" position. The agitator motor and the carbonator pump motor only will start and fill the Hydro Boost® coil with plain water. APPROXIMATELY 2-1/2 MINUTES AFTER THE CARBONATOR PUMP MOTOR HAS STARTED, THE REFRIGERATION COMPRESSOR AND THE COMPRESSOR COOLING FAN WILL START.

NOTE: As the ice bank forms in the water tank, water expansion will take place and excess water will escape through the water tank overflow hose to the permanent floor drain.

The Cooling Unit will begin forming an ice bank and the refrigerated Hydro Boost® coil will also be chilling the water. When full ice bank has been formed, the Cooling Unit compressor and the compressor cooling fan will stop but the agitator motor will continue to operate circulating ice water bath in the water tank.

10. Dispense from the dispensing station until carbonated water appears at the dispensing valve which indicates the Cooling Unit plain and carbonated water systems have been filled.

11. Place the CIRCULATING MOTOR power switch in the "ON" position.The Circulating pump will start and begin circulating carbonated water in the carbonated water circulating system as explained in SYSTEM THEORY OF OPERATION in GENERAL INFORMATION SECTION.

12. Dispense carbonated water from the dispensing valve to make sure all air has been purged from the system.

13. If the Cooling Unit plain water outlet line has been connected to a dispensing station dispensing valve, dispense from the valve until all air has been purged from the plain water system.

14. Adjust the soft drink tanks secondary CO_2 regulators (see Figure 2) as follows:

Sugar Syrup Soft Drink Tanks CO_2 Regulator.

Adjust sugar syrup soft drink tanks secondary CO_2 regulator at 40-psig for syrup lines up to 10-feet in length plus one pound for each additional length of 10-feet, plus one pound for each 2-feet of vertical lift. For example: if syrup line total length is 30-feet and total vertical lift is 6-feet, then 40-psig + 2-psig (1-pound for every 10-feet of length over 10-feet which is 20-feet) + 3-psig (1-pound for every 2-feet of vertical lift which is 6-feet); total equals 40 + 2 + 3 = 45-psig CO_2 regulator setting.

Low-Calorie (diet) Syrup Soft Drink Tank CO_2 Regulator.

Adjust low-calorie (diet) soft drink tank secondary CO_2 regulator for low-calorie drink at 10-psig for syrup lines up to 30-feet in length. Syrup lines longer than 30-feet in length may require a slightly higher CO_2 regulator setting to 12-psig maximum. Excessive CO_2 pressure may cause low-calorie syrup carbonation resulting in foam.

IMPORTANT: The syrup systems must be sanitized as instructed before syrup is connected into the syrup systems.

15. Connect soft drink tanks into the syrup systems.
16. Dispense from the dispensing station dispensing valves until product is dispensed.

LEAK CHECK AND INSULATING COOLING UNIT OUTLET LINES

1. Check all CO_2, plain and carbonated water, and syrup connections for leaks and repair if evident.
2. Make sure the Cooling Unit outlet lines connections to the insulated python lines are well insulated.
3. Install the Cooling Unit top cover and secure with two screws.

DISPENSING STATION ADJUSTMENTS

ADJUSTING WATER FLOW RATE

Refer to Installation Instructions provided with the Dispensing Station for dispensing valve water flow rate adjustment instructions.

ADJUSTING WATER-TO-SYRUP "RATIO" OF DISPENSED PRODUCT

Adjust the Dispensing Station dispensing valves for Water-to-Syrup "Ratio" of the dispensed product as instructed in Dispensing Station Installation Instructions.

INSTALLING LINE IDENTIFICATION LABEL

Install LABEL, LINE IDENTIFICATION (item 4) on the Cooling Unit, then record syrup flavors in the proper spaces.

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OPERATORS INSTRUCTIONS

This section covers operating controls, daily pre-operation check, adjustments, replenishing CO_2 and syrup supplies, cleaning and sanitizing, Cooling Unit maintenance, Remote Condenser Coil and Fan Assembly maintenance, lubrication, and servicing CO_2 gas check valves.

WARNING: Disconnect electrical power to the Cooling Unit and the Remote Condenser Coil and Fan Assembly to prevent personal injury before attempting any internal maintenance. Only qualified personnel should service the internal components or electrical wiring.

OPERATING CONTROLS

COOLING UNIT REFRIGERATION POWER SWITCH

(see applicable Figure 4 or 5)

The REFRIGERATION POWER switch, located on the front of the Cooling Unit, placed in the "OFF" position will interrupt electrical power to the refrigeration compressor, agitator motor, compressor cooling fan, carbonated water circulating pump, and the carbonator pump motor. The REFRIGERATION POWER switch placed in the "ON" position will start the carbonator pump motor (if carbonated water is being called for), the carbonated water circulating pump motor, and the agitator motor. Under certain conditions, approximately 2-1/2 minutes after the REFRIGERATION POWER SWITCH has been placed in the "ON" position, the refrigeration compressor and compressor cooling fan will start.

COOLING UNIT CARBONATOR MOTOR SWITCH

(see applicable Figure 4 or 5)

The CARBONATOR MOTOR power switch, located on the front of the Cooling Unit, placed in the "OFF" position, will interrupt electrical power to the carbonator pump motor. The switch must be placed in the "ON" position before the carbonator pump motor will operate.

COOLING UNIT CIRCULATING MOTOR SWITCH

(see applicable Figure 4 or 5)

The CIRCULATING MOTOR power switch, located on the front of the Cooling Unit, placed in the "OFF" position, will interrupt electrical power to the carbonated water circulating pump. The switch *must* be placed in the "ON" position before the circulating pump will operate.

REFRIGERATION SYSTEM TEMPERATURE SENSING DEVICE AND HIGH-PRESSURE CUTOUT SWITCH

(see Figure 5)

The Cooling Unit is equipped with a refrigeration system temperature sensing device and a high-pressure sensing cutout switch that will shut the refrigeration system down should the system overheat due to a low water supply (Unit with water-colled refrigeration system) or a clogged condenser coil (Unit with a Remote Condenser Coil and Fan Assembly). If the refrigeration system does not automatically restart itself after the system has cooled down, the high-pressure sensing cutout switch (located inside electrical control box) will have to be pressed to reset the switch. *MAKE SURE THE REFRIGERATION SYSTEM PROBLEM IS CORRECTED. OPERATING THE REFRIGERATION SYSTEM IN THIS MANNER FOR A PROLONGED PERIOD OF TIME COULD RESULT IN COMPRESSOR FAILURE.*

DAILY PRE-OPERATION CHECK

1. Make sure the CO_2 cylinder regulator assembly 1800-psi gage indicator is not in the shaded ("change CO_2 cylinder") portion of the dial. If so, the CO_2 cylinder is almost empty and must be replaced.
2. Sufficient syrup supply in all the soft drink tanks. If not, replenish the syrup supply as instructed.

ADJUSTMENTS

ADJUSTING CO_2 REGULATORS

The CO_2 regulators should be periodically checked for proper pressure settings and if necessary, adjusted as instructed in the SERVICE AND MAINTENANCE section of this manual.

ADJUSTING DISPENSING VALVES WATER FLOW RATE

If adjustment of the dispensing valves water flow rate should be necessary, adjust as instructed in the Dispensing Station Installation Instructions.

ADJUSTING WATER-TO-SYRUP "RATIO" OF DISPENSED PRODUCT

The Water-To-Syrup "Ratio" of the dispensed product should be checked and if necessary, adjusted as instructed in the Dispensing Station Installation Instructions.

ADJUSTING SIZE OF DRINK DISPENSED

Adjust the drink size of the dispensed product as instructed in the Dispensing Station Installation Instructions.

REPLENISHING CO_2 SUPPLY

WARNING: CO_2 displaces oxygen. Strict attention *must* be observed in the prevention of CO_2 (carbon dioxide) gas leaks in the entire CO_2 and soft drink system. If a CO_2 gas leak is suspected, particularly in a small area, *immediately* ventilate the contaminated area before attempting to repair the leak. Personnel exposed to high concentration of CO_2 gas will experience tremors which are followed rapidly by loss of consciousness and suffocation.

NOTE: When indicator on the CO_2 cylinder regulator assembly 1800-psi gage is in the shaded ("change CO_2 cylinder") portion of the dial, CO_2 cylinder is almost empty and should be changed.

The CO_2 supply should be checked daily and if necessary, be replenished as instructed.

CLEANING AND SANITIZING

DAILY CLEANING

Perform daily cleaning of the dispensing station as instructed in the dispensing station installation instructions. The outside of the Cooling Unit must be cleaned periodically.

SANITIZING SYRUP SYSTEMS

The syrup systems should be sanitized every 90–days as instructed in the SERVICE AND MAINTENANCE section of this manual.

COOLING UNIT MAINTENANCE

COOLING UNIT WITH INTERNAL CONDENSER COIL AND FAN ASS'Y

Air to cool the Cooling Unit internal condenser coil is drawn in through the end access panel on end of the Unit and is exhausted out through the front and rear access panels on the Unit. The Cooling Unit condenser coil surface area *must* be cleaned every 30-days as instructed in the SERVICE AND MAINTENANCE section of this manual. The area around the Cooling Unit *must* be kept free of obstructions at all times for proper air circulation through the Unit.

CHECKING ICE WATER BATH

A gurgle heard from the Cooling Unit indicates the water level in the water tank is low and more water should be added to the tank for maximum product cooling. Periodically check, and if necessary, add water to the water tank as instructed in the SERVICE AND MAINTENANCE section of this manual.

COOLING UNIT CARBONATOR MAINTENANCE

NOTE: Periodically operate carbonator tank relief valve.

Lubrication.

The carbonator water pump motor bearings must be oiled periodically as instructed in the SERVICE AND MAINTENANCE section of this manual.

Double Liquid Check Valve Assemblies Yearly Maintenance (or After Water System Disruptions).

(see Figure 2)

The two double liquid check valve assemblies are located in the plain water lines connected between the plain water cooling coils and the carbonated water tank. The double liquid check valve assemblies *must* be inspected and cleaned at least once a year under normal circumstances and after any water system disruption (plumbing work, earthquake, etc.) Inspect and clean the double liquid check valve assemblies as instructed in the SERVICE AND MAINTENANCE section of this manual.

COOLING UNIT CARBONATED WATER CIRCULATING PUMP MOTOR LUBRICATION

The carbonated water circulating pump motor bearings must be oiled periodically as instructed in the SERVICE AND MAINTENANCE section of this manual.

REMOTE CONDENSER COIL AND FAN ASS'Y MAINTENANCE

(see Figure 5)

CAUTION: The Remote Condenser Coil and Fan Assembly connected to the Cooling Unit is equipped with a condenser coil that *must* be cleaned every 30-days. Allowing the condenser coil to become clogged will cause the refrigeration system to overheat which will automatically shut the refrigeration system down. After the condenser coil has been cleaned, the high-pressure cutout sensing switch (located inside the Cooling Unit electrical control box) will have to be pressed to restart the refrigeration system. OPERATING THE COOLING UNIT IN THIS MANNER FOR A PROLONGED PERIOD OF TIME, COULD RESULT IN COMPRESSOR FAILURE.

Area on top of and around the Remote Condenser Coil and Fan Assembly *must* be kept free of obstructions at all times. The Condenser coil must be cleaned as instructed in the SERVICE AND MAINTENANCE section of this manual to maintain proper cooling of the coil.

CLEANING CO_2 GAS CHECK VALVES

(see Figure 2)

The CO_2 gas check valves *must* be inspected and serviced at least once a year under normal conditions and after any CO_2 system servicing or disruption as instructed in the SERVICE AND MAINTENANCE section of this manual.

SERVICE AND MAINTENANCE

This section describes the Service and Maintenance procedures to be performed on the Cooling Unit and the Remote Condenser Coil and Fan Assembly.

WARNING: Disconnect electrical power to the Cooling Unit and the Remote Condenser Coil and Fan Assembly to prevent personal injury before attempting any Cooling Unit or Remote Condenser Coil and Fan Assembly internal maintenance. Only qualified personnel should service the internal components or electrical wiring.

PREPARING COOLING UNIT FOR SHIPPING, STORING, OR RELOCATING

CAUTION: Before shipping, storing, or relocating the Cooling Unit, the syrup system *must* be sanitized and all sanitizing solution must be purged from the syrup systems. All water *must* be purged from the plain and the carbonated water systems and the ice bank must be melted and all water drained from the water tank. A freezing ambient environment will cause residual water remaining inside the Unit to freeze resulting in damage to the internal components.

PERIODIC INSPECTION

COOLING UNIT EQUIPPED WITH INTERNAL CONDENSER COIL AND FAN ASSEMBLY

(see Figure 4)

CAUTION: The internal condenser coil *must* be cleaned every 30-days as instructed. Circulating air required to cool the condenser coil is drawn in through the end access panel and is exhausted out through the front access panel on front of the Unit. Failure to clean, and allowing the condenser coil to become clogged, will cause the refrigeration system to overheat which will automatically shut the refrigeration system down. After the refrigeration system has cooled down, the system will automatically restart and operate until overheated and then will shut down again. OPERATING THE COOLING UNIT IN THIS MANNER FOR A PROLONGED PERIOD OF TIME COULD RESULT IN COMPRESSOR FAILURE.

Clean condenser coil every 30-days as instructed in this section of the manual. Area around the Cooling Unit *must* be kept free of obstructions at all times for proper air circulation through the unit.

COOLING UNIT UTILIZING A REMOTE CONDENSER COIL AND FAN ASSEMBLY

(see Figure 5)

CAUTION: The Remote Condenser Coil and Fan Assembly connected to the Cooling Unit is equipped with a condenser coil that *must* be cleaned every 30-days. Allowing the condenser coil to become clogged will cause the refrigeration system to overheat which will automatically shut the refrigeration system down. After the condenser coil has been cleaned, the high-pressure sensing cutout switch (located inside the Cooling Unit electrical control box) will have to be pressed to restart the refrigeration system. OPERATING THE COOLING UNIT IN THIS MANNER FOR A PROLONGED PERIOD OF TIME COULD RESULT IN COMPRESSOR FAILURE.

Clean the Remote Condenser Coil and Fan Assembly condenser coil every 30-days, as instructed in this section of the manual. Make sure area on top and around the Unit are kept free of obstructions at all times. Air must be allowed to enter and leave the Unit to remove heat from the condenser coil. Restricting air through the condenser coil will cause the Cooling Unit refrigeration system to overheat.

COOLING UNIT EQUIPPED WITH WATER-COOLED REFRIGERATION SYSTEM

The Cooling Unit equipped with a water-cooled refrigeration system requires no cleanning of it's condenser coil.

COOLING UNIT MAINTENANCE

PERIODIC CLEANING

Periodically operate the carbonator tank relief valve.

Periodically wash all external surfaces of the Cooling Unit, rinse with clean water, then wipe dry with a clean soft cloth. *DO NOT USE ABRASIVE TYPE CLEANERS.*

CLEANING CONDENSER COIL (COOLING UNIT EQUIPPED WITH INTERNAL CONDENSER COIL)

(see Figure 4)

CAUTION: The Cooling Unit condenser coil *must* be cleaned every 30 days. Excessive accumulation of dust, lint, and grease on the condenser coil will restrict air flow through the coil which will cause the refrigeration system to overheat.

Note: The Cooling Unit end access panel *must* be removed for access to the condenser coil.

Excessive accumulation of dust, lint, and grease on the condenser coil will restrict air flow through the coil and cause a loss of cooling efficiency. Vacuum or use a soft brush to clean the condenser coil. If available, use low-pressure compressed air to clean the coil.

CHECKING ICE WATER BATH

(see applicable Figure 4 or 5)

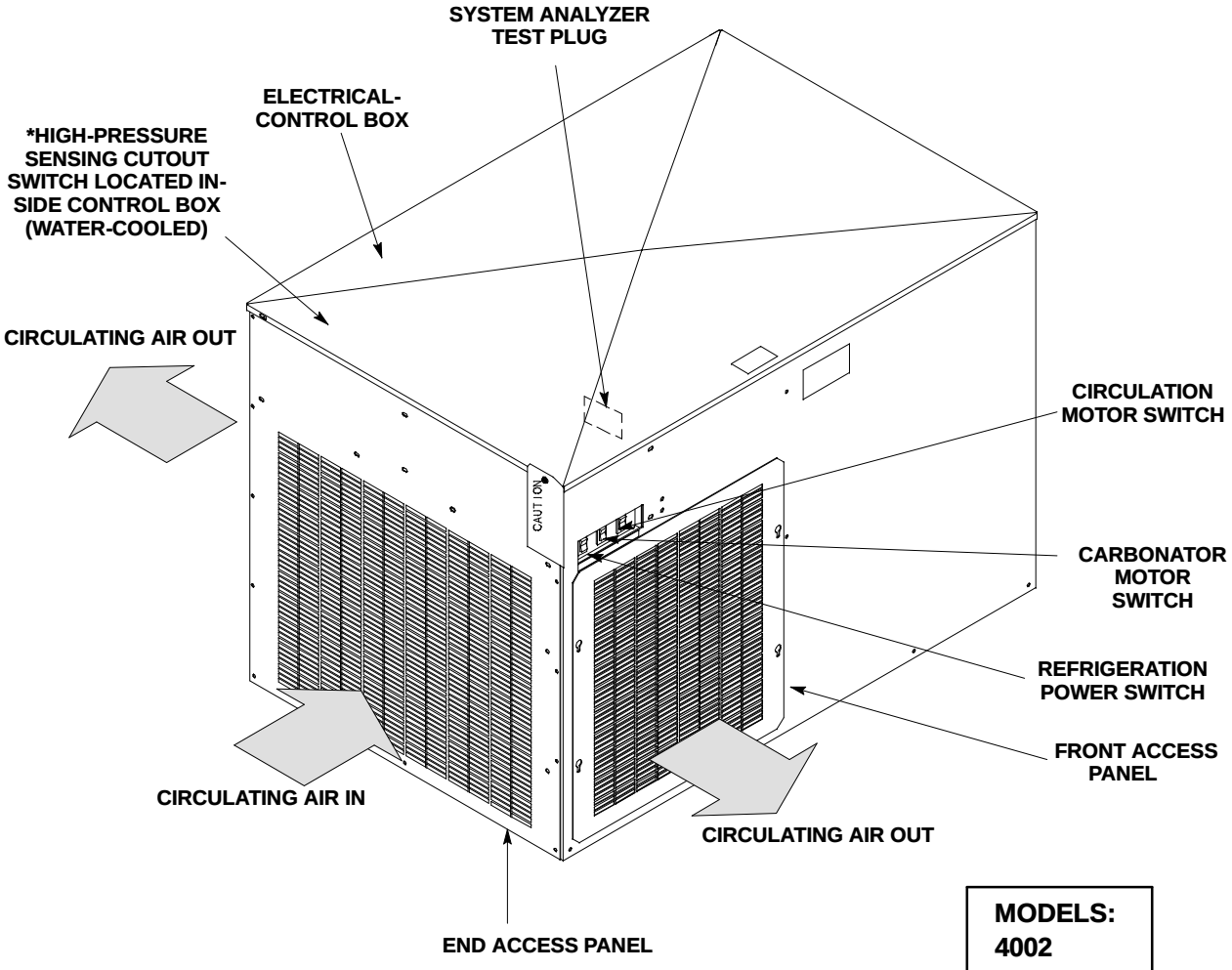
A gurgle heard from the Cooling Unit indicates water level in the water tank is low and more water should be added to the tank for maximum product cooling. The ice water bath and the ice bank should be checked for cleanliness and the water tank coils should be checked for excessive mineral deposit build-up as follows:

1. Disconnect electrical power from the Cooling Unit at the disconnect switch.
2. Remove two screws securing the Cooling Unit top cover, then remove the cover.
3. Using a flashlight, inspect the ice water bath and the ice bank for cleanliness.The ice water bath should be clear and the ice bank should be free of foreign particles.
4. If cleaning of the water tank is necessary, refer to CHANGING ICE WATER BATH in this section.
5. Fill the water tank with clean water until water starts flowing from the water tank overflow hose. *USE LOW MINERAL CONTENT WATER WHERE A LOCAL WATER PROBLEM EXISTS.*
6. Install Cooling Unit top cover and secure with four screws.
7. Restore electrical power to the Cooling Unit at the disconnect switch.

CHANGING ICE WATER BATH

(see applicable Figure 4 or 5)

1. Disconnect electrical power from the Cooling Unit at the disconnect switch.
2. Remove four screws securing the Cooling Unit top cover, then remove the cover.



*Water-Cooled Refrigeration System.

FIGURE 4. PARTS IDENTIFICATION (COOLING UNIT W/INTERNAL CONDENSER COIL)

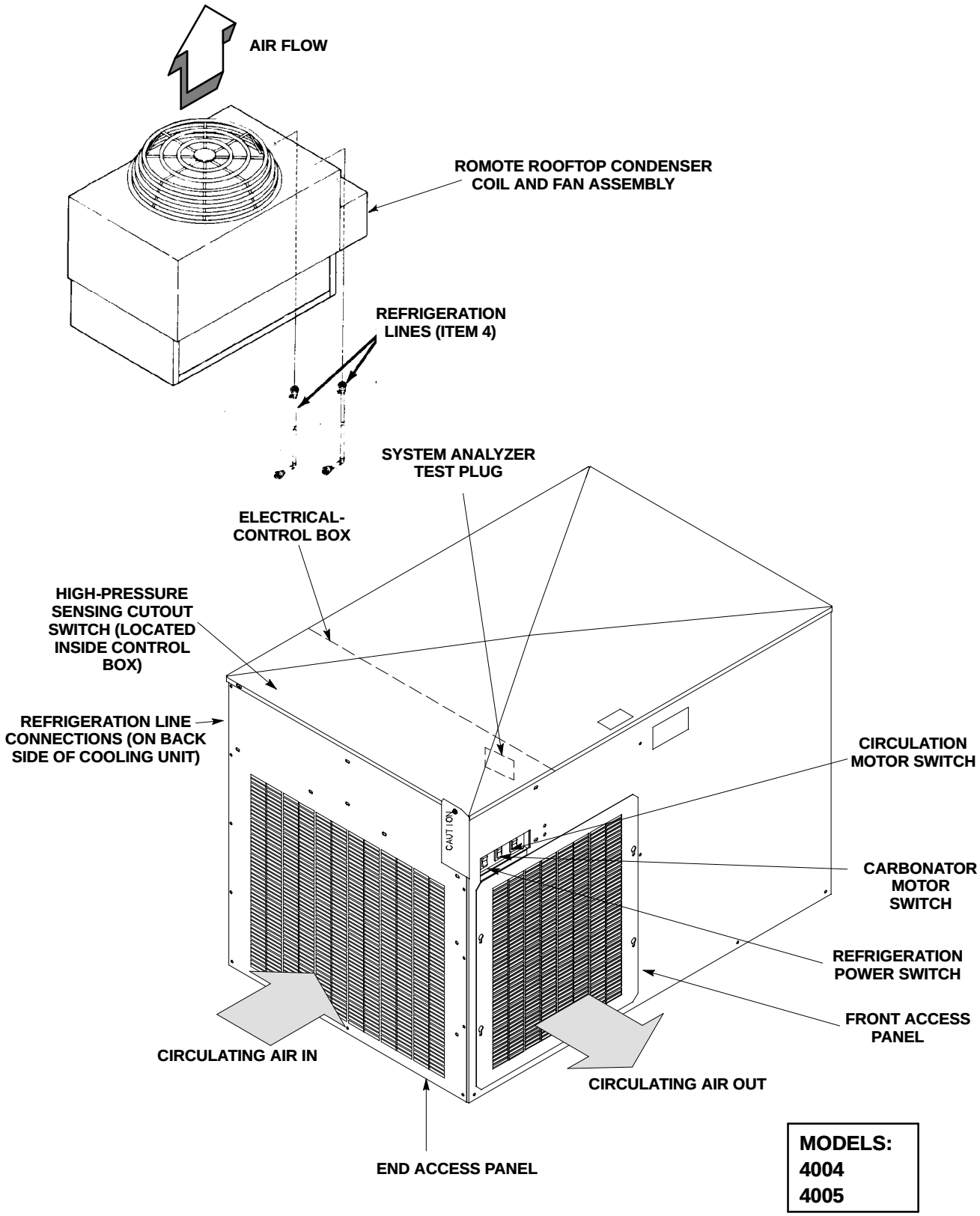


FIGURE 5. PARTS IDENTIFICATION (COOLING UNIT REQUIRING CONNECTION TO REMOTE CONDENSER COIL AND FAN ASSEMBLY)

3. Make sure end of the water tank drain hose is routed to the floor drain, then remove plug from end of the hose and allow water to drain from tank.

CAUTION: Never use an ice pick or other instruments to remove ice from the evaporator coils. Such practice can result in punctured refrigeration circuit.

4. Allow ice bank to melt. Hot water may be used to speed melting.
5. Thoroughly rinse inside of the water tank with clean water.
6. Install plug in end of the water tank drain hose.
7. Fill water tank with clean water until water starts flowing from the water tank overflow hose. USE LOW MINERAL CONTENT WATER WHERE A LOCAL WATER PROBLEM EXISTS.
8. Install Cooling Unit top cover and secure with four screws.
9. Connect electrical power to the Cooling Unit at the disconnect switch.

DOUBLE LIQUID CHECK VALVE ASSEMBLIES YEARLY MAINTENANCE (OR AFTER WATER SYSTEM DISRUPTIONS)

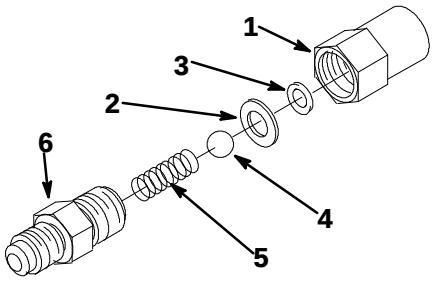
(see Figures 2 and 6)

WARNING: The two double liquid check valve assemblies *must* be inspected and serviced at least once a year under normal circumstances, and after any disruptions (plumbing work, earthquake, etc.) to the water supply system that might cause turbulent (erratic) flow of water through the system. Fouled liquid check valves could cause CO_2 gas to back flow from the carbonated water tank into the water system and create a health hazard in the system.

The two double liquid check valve assemblies are located in the plain water lines connected between the plain water cooling coils and the carbonated water tank. Inspect and clean the double liquid check valve assemblies as follows:

1. Disconnect electrical power from the Cooling Unit at the disconnect switch.
2. Close shutoff valve in the plain water inlet supply line.
3. Note pressure setting on the carbonator CO_2 regulator, then turn the regulator adjusting screw to the left (counterclockwise) until the regulator gage reads 0-psi.
4. Remove four screws securing the Cooling Unit top cover, then remove the cover.
5. Pull up on the carbonator tank relief valve to release CO_2 pressure from the tank.
6. Remove the double liquid check valve assembly from the plain water line connected between the plain water cooling coil and the carbonated water tank.
7. Remove one check valve from the other, then disassemble each check valve as shown in Figure 6.
8. Wipe each part with clean lint-free cloth. Inspect each part, especially the ball, for burrs, nicks, corrosion, deterioration, and other damage. Discard ball seat and any damaged or suspicious parts and replace with new parts during reassemble.
9. Reassemble check valves as shown in Figure 6. ALWAYS install a new ball seat (QUAD RING) (P/N 312418000.

NOTE: Make sure when assembling the check valves together, the check valve female end with white tapered gasket inside, is on the inlet side of the double liquid check valve assembly.



Index No.	Part No.	Name
1	317963	Housing
2	312415	Flat Washer, Stainless Steel
3	*312418	Ball Seat (quad ring)
4	312419	Ball
5	312196	Spring
6	317965	Retainer
* Install new ball seat at each servicing.		

FIGURE 6. LIQUID CHECK VALVE ASSEMBLY

10. Assemble the check valves together. *DO NOT OVERTIGHTEN.*
11. Install the double liquid check valve assembly in the plain water line connected between the plain water cooling coil and the carbonated water tank.
12. Repeat preceding steps 6) through 11) to service the other double liquid check valve in the other plain water line connected between the plain water cooling coil and the carbonated water tank.
13. Turn the carbonator CO_2 regulator adjusting screw to the right (clockwise) until its gage indicates the pressure setting observed in step 3) preceding.
14. Open shutoff valve in the plain water inlet supply line.
15. Restore electrical power to the Cooling Unit at the disconnect switch.
16. Dispense carbonated water at the dispensing station and allow the carbonator to cycle on and off. Check for water leaks and repair if evident.
17. Disconnect electrical power from the Cooling Unit at the disconnect switch.
18. Install Unit top cover and secure with two screws.
19. Restore electrical power to the Cooling Unit at the disconnect switch.

LUBRICATION

The carbonator water pump and the carbonated water circulating pump motor bearings *must* be oiled periodically, refer to oiling instructions on the motors. *DO NOT OVER OIL*.

REMOTE CONDENSER COIL AND FAN ASSEMBLY MAINTENANCE

(see Figure 5)

PERIODIC CLEANING

Periodically wash all external surfaces of the Remote Condenser Coil and Fan Assembly, rinse with clean water, then wipe dry with a clean soft cloth. DO NOT USE ABRASIVE TYPE CLEANERS.

CLEANING CONDENSER COIL

CAUTION: Circulating air, required to pass through and cool the condenser coil, is drawn in at the bottom and is exhausted out through the top of the Unit. Failure to clean the condenser coil will cause the refrigeration system to overheat.

1. Disconnect electrical power to the Cooling Unit at the disconnect switch.
2. Clean bottom side of the condenser coil using a vacuum cleaner, whisk broom, or soft-bristle brush to remove any debris from the coil.
3. Check and make sure the fan blade moves freely and is not touching any surfaces, are not bent, or out of balance. Check and make sure the wire guard is properly installed and is securely fastened.
4. Check and make sure the roof area immediately surrounding the Unit is free and clear of any debris that may have collected such as leaves, paper,trash, etc.
5. Restore electrical power to the Cooling Unit at the disconnect switch.

ADJUSTMENTS

NOTE: To readjust the CO_2 regulator to a lower setting loosen the adjusting screw lock nut, then turn the screw to the left (counterclockwise) until the pressure gage reads 5-psi lower than the new setting will be. Turn the adjusting screw to the right (clockwise) until the gage registers new setting, then tighten the lock nut.

PRIMARY CO_2 REGULATOR

(see Figure 2).

Adjust the primary CO_2 regulator on the CO_2 cylinder to a minimum nominal setting of 120-psi or 24-psi higher than the highest setting required by the secondary CO_2 regulators. Loosen the CO_2 regulator adjusting screw locknut. Turn the adjusting screw to the right (clockwise) until the regulator gage registers nominal 120-psi, then tighten the adjusting screw locknut.

SECONDARY CO_2 REGULATORS

(see Figure 2).

Carbonator Secondary CO_2 Regulator.

Adjust the carbonator secondary CO_2 regulator to a nominal 90-psi. Loosen the CO_2 regulator adjusting screw locknut. Turn the adjusting screw to the right (clockwise) until the regulator gage registers nominal 90-psi, then tighten the adjusting screw locknut. *CO_2 PRESSURE TO THE CARBONATORS MUST NOT EXCEED 125-PSIG.*

Sugar Syrup Soft Drink Tanks CO_2 Regulators.

Adjust sugar syrup soft drink tanks secondary CO_2 regulator at 40-psig for syrup lines up to 10-feet in length plus one pound for each additional length of 10-feet, plus one pound for each 2-feet of vertical lift. For example: if syrup line total length is 30-feet and total vertical lift is 6-feet, then 40-psig + 2-psig (1-pound for every 10-feet of length over 10-feet which is 20-feet) + 3-psig (1-pound for every 2-feet of vertical lift which is 6-feet); total equals 40 + 2 + 3 = 45-psig CO_2 regulator settings.

Low-Calorie (diet) Syrup Soft Drink Tank CO_2 Regulator.

Adjust low-calorie (diet) soft drink tank secondary CO_2 regulator for low-calorie drink at 10-psig for syrup lines up to 30-feet in length. Syrup lines longer than 30-feet in length may require a slightly higher CO_2 regulator setting to 12-psig maximum. Excessive pressure may cause low-calorie syrup carbonation resulting in foam.

WATER FLOW RATE

Refer to Installation Instructions provided with the dispensing station for dispensing valve water flow rate adjustment instructions.

WATER-TO-SYRUP "RATIO" OF DISPENSED PRODUCT

Adjust the dispensing station dispensing valves for Water-to-Syrup "Ratio" of the dispensed product as instructed in dispensing station Installation Instructions.

ADJUSTING WATER-COOLED REFRIGERATION SYSTEM VARIABLE WATER REGULATOR

IMPORTANT: Water flow rate through the refrigeration cooling coil varies due to pressure change on the high side of the refrigeration compressor, which influences opening and closing of the variable water regulator (see Figure 9). The variable water regulator must be adjusted to maintain a 240-psi refrigeration system high-side pressure. Adjust the variable water regulator as follows:

1. Disconnect electrical power from the Cooling Unit at the disconnect switch.
2. Remove the Cooling Unit left side panel and front grille.
3. Connect gauges to the high-pressure side of the refrigeration system.
4. Restore electrical power to the Unit at the disconnect switch.
5. Operate the refrigeration system with the gauges installed. After approximately 5 minutes of operation, adjust the refrigeration cooling coil variable water regulator (see Figure 9) to maintain a 240-psi refrigeration system high-side pressure. The adjustment screw is located on the end of the coil assembly and must be turned to the right (clockwise) to decrease the pressure or to the left (counterclockwise) to increase the pressure.
6. After the pressure adjustment has been completed, disconnect electrical power to the Cooling Unit at the disconnect switch.
7. Install left side panel and front grille on the Cooling Unit.
8. Restore electrical power to the Cooling Unit at the disconnect switch.

CLEANING AND SANITIZING

DAILY CLEANING OF UNIT

1. Remove cup rest from the drip tray.
2. Wash drip tray in place on the Unit, then rinse drip tray with hot water allowing water to drain out through the drain hose.
3. Wash cup rest, then rinse the cup rest with clean water. Install cup rest in the drip tray.

4. Clean all external surfaces of the Unit with a sponge. Rinse out the sponge with clean water, then wring excess water out of the sponge and wipe off all external surfaces on the Unit. Wipe Unit dry with a clean soft cloth. DO NOT USE ABRASIVE CLEANERS.

5. Remove nozzle and syrup diffusers from the dispensing valves. Place nozzles and syrup diffusers in sanitizing solution.

6. Wash the nozzles and syrup diffusers in sanitizing solution, then rinse them with potable water.

7. Re-install nozzles and syrup diffusers back on the dispensing valves.

SANITIZING POST-MIX SYRUP SYSTEMS

IMPORTANT: Only qualified Service Personnel should perform sanitizing procedure on the post-mix syrup systems.

The post-mix syrup systems should be sanitized every 90-days using a non-scented household liquid bleach containing a 5.25 % sodium hypochlorite concentration. Proceed as follows to sanitize the post-mix syrup systems.

1. Disconnect syrup supplies from syrup systems.

2. Rinse quick disconnects (syrup tanks systems) or bag-in-box connectors (syrup bag-in-box systems) in warm potable water.

STEP 1. WASH SYRUP SYSTEMS

3. Using a clean syrup tank (syrup tank system) or a five-gallon container (bag-in-box system), prepare a full tank or container of liquid dishwasher detergent by using 70° F (21° C) to 100° F (38° C) potable water and 0.5 oz. (15 ml) of liquid dishwasher detergent to one gallon of potable water. Stir detergent solution to thoroughly mix the solution.

4. Syrup Tank Systems.

   A. Observe and note CO_2 pressure setting on the syrup tanks CO_2 regulator, then re-adjust CO_2 regulator to 60 to 80-psi. Pressurize syrup tank containing detergent solution to 60 to 80-psi.

   B. Connect detergent solution tank, pressurized at 60 to 80-psi, into one of the syrup systems.

   Bag-in Box Syrup Systems.

   C. Install bag valves, cut from empty bag-in-box syrup containers, on ends of syrup containers syrup outlet tubes connectors.

   D. Place all syrup outlet tubes, with bag valves on their ends, in container containing detergent solution.

5. Flush the syrup system and dispensing valve as follows:

   A. Place waste container under applicable dispensing valve.

   B. Activate the dispensing valve for one minute to purge all syrup and flush out the syrup system.

   C. Continue to activate the dispensing valve in cycles ("ON" for 15-seconds, "OFF", then "ON" for 15-seconds). Repeat "ON" and "OFF" cycles for 15-cycles.

6. Connect detergent solution to the remaining syrup systems and flush syrup out of the syrup systems as instructed in step 5 preceding.

7. Remove detergent solution source from the syrup system.

STEP 2. FLUSH SYRUP SYSTEMS

8. Syrup Tank Systems.

   Connect syrup tank containing potable water, pressurized at 60 to 80-psi, into one of the syrup systems.

Bag-in-Box Syrup System.

Fill five-gallon container with potable water, then place all bag-in-box syrup containers syrup outlet tubes in container containing potable water.

9. Flush detergent solution out of the syrup system and dispensing valve as follows:

   A. Place waste container under applicable dispensing valve.

   B. Activate the dispensing valve for one minute to purge all detergent solution and flush out the syrup system.

   C. Continue to activate the dispensing valve in cycles ("ON" for 15-seconds, "OFF", then "ON" for 15-seconds). Repeat "ON" and "OFF" cycles for 15-cycles.

10. Connect potable water source to the remaining syrup systems and flush detergent solution out of the syrup systems as instructed in step 9 preceding.

11. Remove potable water source from the syrup system.

STEP 3. SANITIZE SYRUP SYSTEMS

12. Using a clean syrup tank (syrup tanks system) or a five-gallon container (bag-in-box system), prepare sanitizing solution using 70° F (21° C) to100° F (38° C) potable water and 0.5 oz. (15 ml) of non-scented household liquid bleach that contains a 5.25 % sodium hypochlorite concentration to one gallon of potable water. This mixture *must not* exceed 200 PPM of chlorine. Stir sanitizing solution to thoroughly mix.

13. Syrup Tank Systems.

    Connect sanitizing solution tank, pressurized at 60 to 80-psi, into one of the syrup systems.

    Bag-in-Box Syrup System.

    Place all bag-in-box syrup containers syrup outlet tubes in container containing sanitizing solution.

14. Sanitize the syrup system and dispensing valve as follows:

    A. Place waste container under applicable dispensing valve.

    B. Activate the dispensing valve for one minute to purge all water from and install sanitizing solution in the syrup system and dispensing valve.

    C. Continue to activate the dispensing valve in cycles ("ON" for 15-seconds, "OFF", then "ON" for 15-seconds). Repeat "ON" and "OFF" cycles for 15-cycles.

15. Repeat steps13 and 14 to flush water out of and install sanitizing solution in the remaining syrup systems and dispensing valves.

16. Remove sanitizing solution source from the syrup system.

17. Allow sanitizing solution to remain in the syrup systems for not less than 10 or no more than 15-minutes (max.) contact time.

STEP 4. WATER FLUSH SYRUP SYSTEMS

WARNING: Flush sanitizing solution from the syrup systems as instructed. Residual sanitizing solution left in the syrup systems could create a health hazard.

18. Fill syrup tank (syrup tank system) or a five-gallon container (bag-in-box system) with potable water.

19. Syrup Tank Systems.

    Connect syrup tank containing potable water, pressurized at 60 to 80-psi, into one of the syrup systems.

Bag-in-Box Syrup System.

Place all bag-in-box syrup containers syrup outlet tubes in container containing potable water.

20. Flush sanitizing solution from the syrup system and the dispensing valve as follows:

    A. Place waste container under applicable dispensing valve.

    B. Activate the dispensing valve for one minute to purge all sanitizing solution out of the syrup system and the dispensing valve.

    C. Continue to activate the dispensing valve in cycles ("ON" for 15-seconds, "OFF", then "ON" for 15-seconds). Repeat "ON" and "OFF" cycles for 15-cycles.

21. Repeat steps 19 and 20 preceding to purge sanitizing solution out of the remaining syrup systems and dispensing valves.

22. Remove potable water source from the syrup system.

STEP 5. PURGE WATER OUT OF SYRUP SYSTEMS (RESTORE OPERATION)

23. Syrup Tank Systems.

    A. Noting syrup tanks CO_2 regulator pressure setting observed in step 4 preceding, readjust CO_2 regulator to the observed pressure setting,

    B. Connect tanks containing syrup into syrup systems.

    Bag-in-Box Syrup System.

    C. Remove all bag valves from bag-in-box syrup containers outlet tubes connectors.

    D. Connect bag-in-box syrup containers into the syrup systems.

24. Place waste container under dispensing valves. Dispense from all dispensing valves to permit syrup to purge all potable water from the syrup systems and the dispensing valves. Continue to dispense from the dispensing valves until only syrup is dispensed from the syrup systems and valves.

WARNING: To avoid possible personal injury or property damage, do not attempt to remove the syrup tank cover until CO_2 pressure has been released from the tank.

25. Dispose of waste sanitizing solution in a sanitary sewer, not in a storm drain, then thoroughly rinse the inside and the outside of the container that was used for sanitizing solution to remove all sanitizing solution residue.

REPLENISHING CO_2 SUPPLY

WARNING: CO_2 displaces oxygen. Strict attention *must* be observed in the prevention of CO_2 (carbon dioxide) gas leaks in the entire CO_2 and soft drink system. If a CO_2 gas leak is suspected, particularly in a small area, *immediately* ventilate the contaminated area before attempting to repair the leak. Personnel exposed to high concentration of CO_2 gas will experience tremors which are followed rapidly by loss of consciousness and suffocation.

NOTE: When indicator on the CO_2 cylinder primary CO_2 regulator assembly 1800-psi gage is in the shaded ("change CO_2 cylinder") portion of dial, the CO_2 cylinder is almost empty and should be changed.

1. Fully close (clockwise) the CO_2 cylinder valve.

2. Slowly loosen the primary CO_2 regulator assembly coupling nut allowing the CO_2 pressure to escape, then remove the regulator assembly from the empty CO_2 cylinder.

3. Unfasten safety chain and remove the empty CO_2 cylinder

WARNING: To avoid personal injury and/or property damage, always secure the CO_2 cylinder in an upright position with a safety chain to prevent it from falling over. Should the valve become accidentally damaged or broken off, the CO_2 cylinder can cause serious personal injury.

4. Position CO_2 cylinder and secure with a safety chain.

5. Make sure gasket is in place inside the primary CO_2 regulator coupling nut, then install the regulator on the CO_2 cylinder.

6. Open (counterclockwise) the CO_2 cylinder valve slightly to allow the lines to slowly fill with gas, then open the valve fully to back-seat the valve. (Back-seating the valve prevents leakage around the valve shaft).

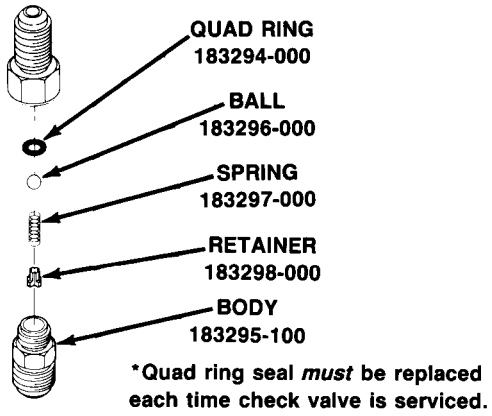


FIGURE 7. CO_2 GAS CHECK VALVE

REPLENISHING SYRUP SUPPLY

NOTE: The following instructions are applicable only when replenishing the same flavor syrup. Refer to SYRUP FLAVOR CHANGE when changing the syrup flavor.

1. Disconnect empty soft drink tank from the syrup system.

2. Check the soft drink tank quick disconnects for sticky or restricted operation. Wash the disconnects in warm water.

3. Connect full tank of syrup into the syrup system.

SYRUP FLAVOR CHANGE

1. Perform sanitizing procedure on the syrup system syrup flavor change will be made on.

2. Check the soft drink tank quick disconnects for sticky or restricted operation. Wash the disconnects in warm water.

3. Connect full tank of new flavor syrup into the syrup system.

CLEANING CO_2 SYSTEM GAS CHECK VALVES

SECONDARY CO_2 REGULATORS AND CO_2 MANIFOLD CO_2 GAS CHECK VALVES

(see Figures 2 and 7)

The secondary CO_2 regulators and the CO_2 manifold CO_2 gas check valves *must* be inspected and serviced at least once a year under normal conditions and after any servicing or disruption of the CO_2 system. *ALWAYS REPLACE BALL SEAT (QUAD RING SEAL) EACH TIME THE GAS CHECK VALVES ARE SERVICED.*

COOLING UNIT CO_2 INLET LINE CO_2 GAS CHECK VALVE

(see Figures 2 and 7)

The CO_2 inlet line CO_2 gas check valve, located inside the Cooling Unit, *must* be inspected and serviced at least once a year under normal conditions and after any servicing or disruption of the CO_2 system. *ALWAYS INSTALL NEW BALL SEAT (QUAD RING) SEAL EACH TIME THE GAS CHECK VALVE IS SERVICED.*

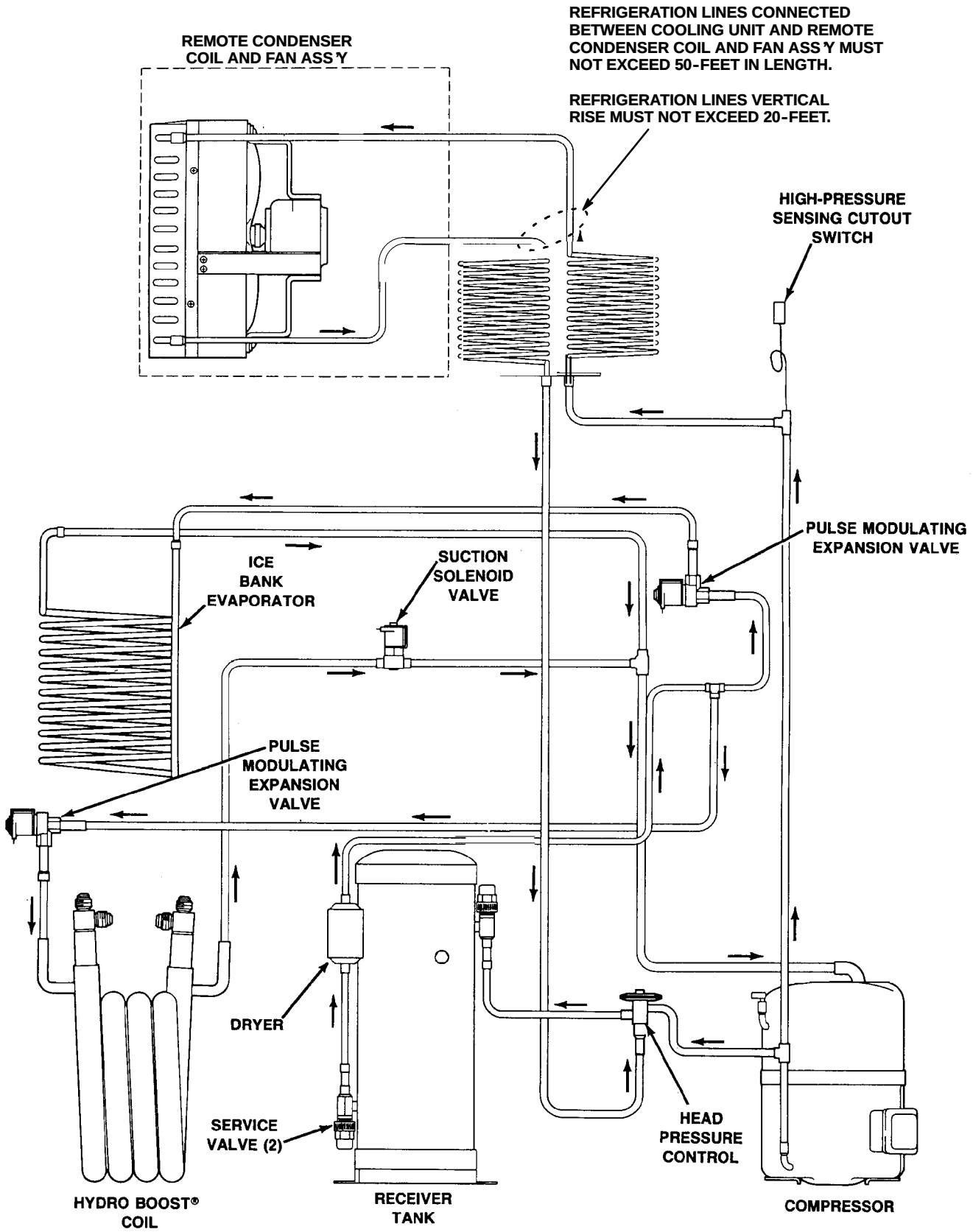

REMOTE CONDENSER COIL AND FAN ASS'Y
REFRIGERATION LINES CONNECTED BETWEEN COOLING UNIT AND REMOTE CONDENSER COIL AND FAN ASS'Y MUST NOT EXCEED 50-FEET IN LENGTH.
REFRIGERATION LINES VERTICAL RISE MUST NOT EXCEED 20-FEET.
HIGH-PRESSURE SENSING CUTOUT SWITCH
PULSE MODULATING EXPANSION VALVE
ICE BANK EVAPORATOR
SUCTION SOLENOID VALVE
PULSE MODULATING EXPANSION VALVE
DRYER
SERVICE VALVE (2)
HEAD PRESSURE CONTROL
HYDRO BOOST® COIL
RECEIVER TANK
COMPRESSOR

FIGURE 8. REFRIGERATION FLOW DIAGRAM (REQIURES CONNECTION TO REMOTE CONDENSER COIL AND FAN ASS'Y)

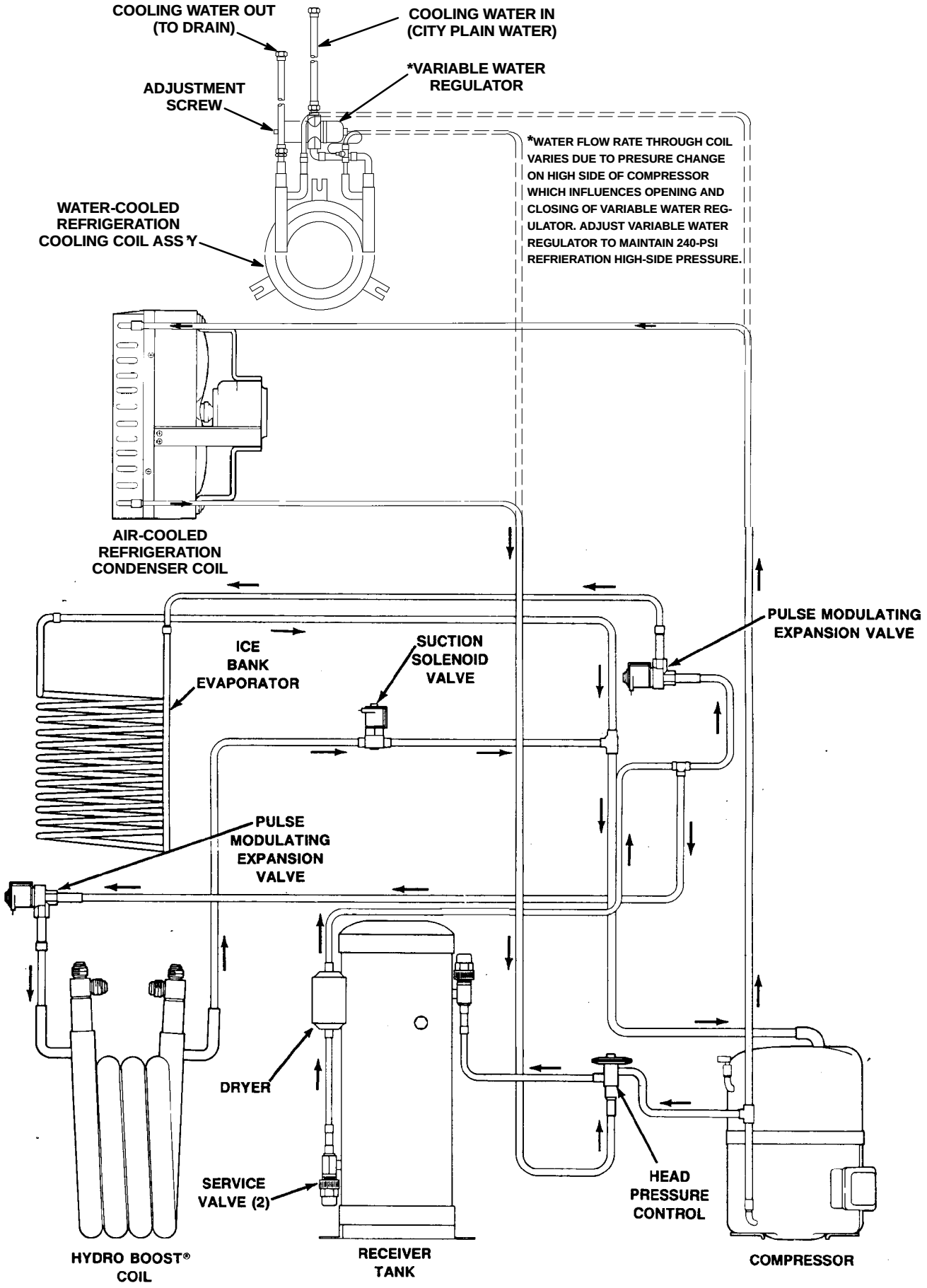


FIGURE 9. REFRIGERATION FLOW DIAGRAM (UNIT WITH WATER-COOLED OR AIR-COOLED REFRIGERATION)

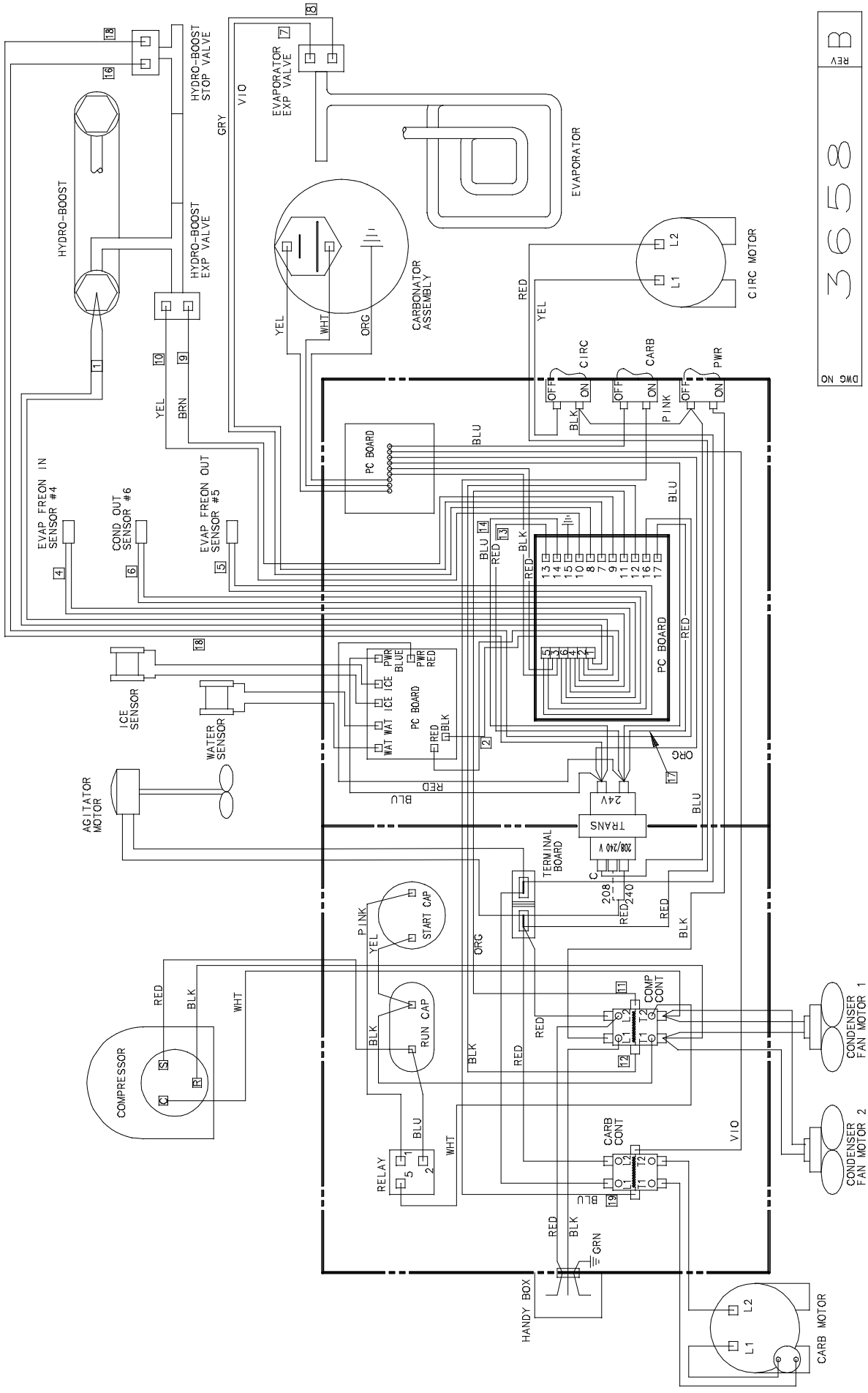


FIGURE 10. WIRING DIAGRAM (MODELS 4002 AND 4003)

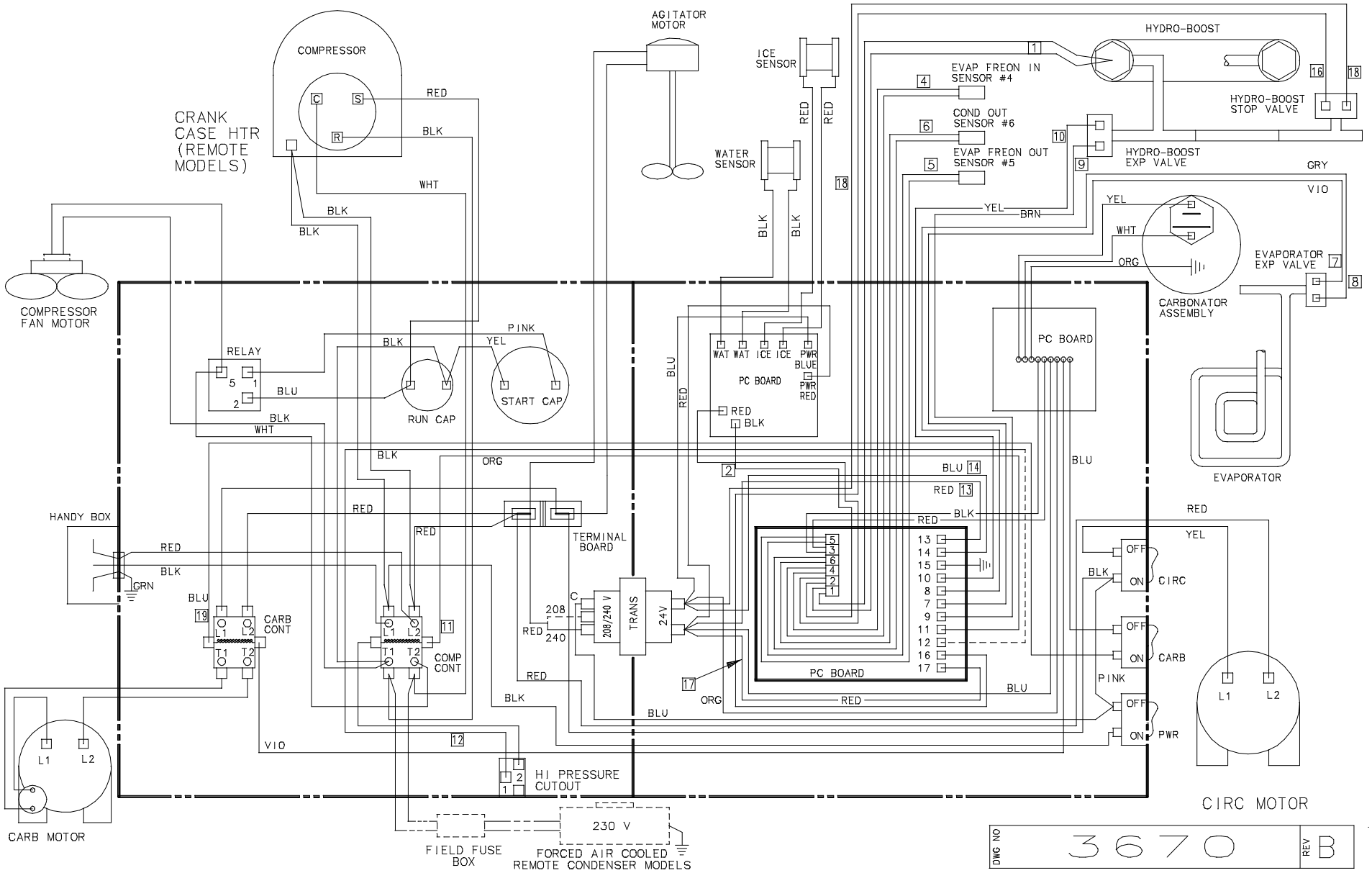


FIGURE 11. WIRING DIAGRAM (MODELS 4004, 4005, 561400006 AND 561400007)

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TROUBLESHOOTING

IMPORTANT: Only qualified personnel should service internal components or electrical wiring.

WARNING: If repairs are to be made to a product system, remove quick disconnects from the applicable product tank, then relieve the system pressure before proceeding. If repairs are to be made to the CO_2 system, stop dispensing, shut off the CO_2 supply, then relieve the system pressure before proceeding. If repairs are to be made to the refrigeration system, make sure electrical power is disconnected from the unit.

TROUBLESHOOTING POST-MIX SYSTEM

Trouble	Probable Cause	Remedy
WATER-TO-SYRUP "RATIO" OF DISPENSED DRINK TOO LOW OR TOO HIGH	A. Dispensing valve syrup flow regulator not properly adjusted.	A. Adjust Water-To-Syrup "Ratio" (refer to dispensing station installation Instructions).
	B. CO_2 gas pressure to soft drink tanks insufficient to push syrup out of tanks.	B. Adjust soft drink tanks secondary CO_2 regulator as instructed.
ADJUSTMENT OF DISPENSING VALVE SYRUP FLOW REGULATOR DOES NOT INCREASE TO DESIRED WATER-TO-SYRUP "RATIO"	A. No syrup supply.	A. Replenish syrup supply as instructed.
	B. Soft drink tank quick disconnects	B. Secure quick disconnects.
	C. Soft drink tanks secondary CO_2 regulator out of adjustment.	C. Adjust soft drink tanks secondary CO_2 regulator as instructed.
	D. Dispensing valve syrup flow regulator, soft drink tank quick disconnect, or syrup line restricted.	D. Sanitize syrup system as instructed.
	E. Tapered nylon washer inside tube swivel nut connector distorted from being overtightened restricting syrup flow.	E. Replace nylon washer. Make sure washer seats properly in swivel nut.
	F. Dirty or inoperative piston or cylinder in dispensing valve syrup flow regulator.	F. Disassemble and clean dispensing valve syrup flow regulator.
ADJUSTMENT OF DISPENSING VALVE SYRUP FLOW REGULATOR DOES NOT DECREASE TO DESIRED WATER-TO- SYRUP "RATIO".	A. Dirty or inoperative piston or cylinder in dispensing valve syrup flow regulator.	A. Disassemble and clean dispensing valve syrup flow regulator.
DISPENSED PRODUCT CARBONATION TOO LOW.	A. Carbonator CO_2 regulator out of adjustment for existing water conditions or temperature.	A. Adjust carbonator CO_2 regulator as instructed.

Trouble	Probable Cause	Remedy
DISPENSED PRODUCT CARBONATION TOO LOW (CONT'D).	B. Water, oil, or dirt in CO_2 supply.	B. Remove contaminated CO_2 supply. Clean CO_2 system (lines, regulators, etc.) using a mild detergent. Replenish with a clean CO_2 supply
DISPENSED PRODUCT COMES OUT OF DISPENSING VALVE CLEAR BUT FOAMS IN CUP.	A. Oil film or soap scum in cups.	A. Use clean cups.
	B. Ice used for finished drink is sub-cooled.	B. Do not use ice directly from freezer. Allow ice to become "wet" before using. (Refer to following NOTE)
NOTE: Crushed ice also causes dispensing problems. When finished drink hits sharp edges of ice, carbonation is released from finished drink.		
DISPENSED PRODUCT PRODUCES FOAM AS IT LEAVES DISPENSING VALVE.	A. Carbonator CO_2 regulator pressure set too high for existing water conditions or temperature.	A. Reduce carbonator CO_2 regulator pressure setting as instructed.
	B. Syrup over-carbonated with CO_2.	B. Remove soft drink tank quick disconnects. Relieve tank CO_2 pressure, shake tank vigorously, then relieve tank CO_2 pressure as many times as necessary to remove over-carbonation.
	C. Tapered nylon washer inside tube swivel nut connection distorted from being overtightened restricting syrup flow.	C. Replace nylon washer. Make sure washer is properly seated in swivel nut.
ONLY CARBONATED WATER DISPENSED.	A. Quick disconnect not secure on soft drink tank.	A. Secure quick disconnect on soft drink tank.
	B. Out of syrup.	B. Replenish syrup supply as instructed.
	C. Inoperable dispensing station.	C. Repair dispensing station.
	D. Dispensing valve syrup flow regulator not properly adjusted.	D. Adjust dispensing valve syrup flow regulator (refer to Installation Instructions provided with dispensing station).
	E. Dispensing valve syrup flow regulator, soft drink tank quick disconnect, or syrup lines restricted.	E. Sanitize syrup system as instructed.
ONLY SYRUP DISPENSED.	A. Plain water inlet supply line shutoff valve closed.	A. Open plain water inlet supply line shutoff valve.
	B. CARBONATOR MOTOR power switch in "OFF" position.	B. Place switch in "ON" position.
	C. Water filter clogged.	C. Replace water filter.

Trouble	Probable Cause	Remedy
WARM PRODUCT BEING DISPENSED.	A. Carbonated water circulating pump CIRCULATING MOTOR power switch in "OFF" position. position.	A. Place circulating pump CIRCULATING MOTOR power switch in "ON"
	B. Inoperable carbonated water circulating pump or motor.	B. Replace pump or motor.
TROUBLESHOOTING CARBONATOR		
WATER PUMP MOTOR WILL NOT OPERATE.	A. Inoperative water pump motor.	A. Replace water pump motor.
	B. Water safety thermostat inoperative.	B. Replace safety thermostat.
	C. Loose connections and/or open electrical circuit.	C. Tighten connections and/or repair open circuit.
	D. Overheated motor cut off by thermal overload protector.	D. Check for proper line voltage. Check for restricted pump discharge.
	E. Water pump binding (new or replacement pumps only.)	E. Remove water pump from motor, rotate pump or motor shaft 180 degrees, then recouple pump to motor.
	F. Inoperative liquid level sensing probe.	F. Replace liquid level sensing probe.
	G. Inoperative liquid level sensing PC board.	G. Replace liquid level sensing PC board.
	H. No 24 VAC to liquid level sensing PC board.	H. Check electrical wiring and transformer for 24 VAC output.
WATER PUMP MOTOR WILL NOT SHUT OFF.	A. Inoperative liquid level sensing probe.	A. Replace liquid level sensing probe.
	B. Inoperative liquid level sensing PC board.	B. Replace liquid level sensing PC board.
	C. Liquid level sensing probe wired wrong.	C. Correct liquid sensing probe wiring.
	D. Leak in carbonated water system.	D. Repair leak in carbonated water system.
ERRATIC CYCLING OF CARBONATOR.	A. Inoperative liquid level sensing probe.	A. Replace liquid level sensing probe.
	B. Inoperative liquid level sensing PC board.	B. Replace liquid level sensing PC board.
	C. Liquid level sensing probe wired wrong.	C. Correct liquid level sensing probe wiring.
	D. Dirty or oily liquid level sensing probe.	D. Clean liquid level sensing probe.
WATER PUMP MOTOR OPERATES BUT WATER PUMP DOES NOT PUMP WATER.	A. Water inlet supply line shutoff valve closed.	A. Open water inlet supply line shutoff valve.
	B. Kinked water inlet supply line.	B. Straighten water inlet supply line.

Trouble	Probable Cause	Remedy
WATER PUMP MOTOR OPERATES BUT WATER PUMP DOES NOT PUMP WATER (CONT'D).	C. Restriction between water pump outlet and carbonator tank inlet.	C. Remove restriction.
	D. Foreign object in water pump bypass.	D. Clean bypass. (Note: Count number of turns bypass screw makes when removing and install same number of turns).
	E. Water pump worn out.	E. Replace water pump.
WATER PUMP CAPACITY TOO LOW.	A. Water supply capacity too low.	A. Water inlet supply must be at a minimum of 300-gallons per hour with a maximum water pressure of 80-psi.
	B. Water filter clogged.	B. Replace water filter cartridge as instructed.
	C. Inoperative water pump.	C. Replace water pump.
TROUBLESHOOTING REFRIGERATION SYSTEM		
COMPRESSOR DOES NOT OPERATE.	A. Ice bank sufficient.	A. Refrigeration not called for.
	B. REFRIGERATION POWER switch in "OFF" position.	B. Place REFRIGERATION POWER switch in "ON" position.
	C. Electrical power to Cooling Unit turned off.	C. Turn on electrical power to Cooling Unit.
	D. No Cooling Unit power source. Blown fuse or tripped circuit breaker.	D. Replace fuse or reset circuit breaker.
	E. Loose, disconnected, or broken wiring.	E. Tighten connections or replace broken wiring.
	F. Hi-pressure cutout switch tripped.	F. Reset pressure switch (see REFRIGERATION SYSTEM TEMPERATURE SENSING DEVICE AND HIGH PRESSURE CUTOUT SWITCH in OPERATORS SECTION.
	G. **Unit with Water-Cooled Refrigeration–**Water supply to the refrigeration cooling coil insufficient.	G. Restore water supply to the refrigeration cooling coil.
	H. Low Voltage.	H. Voltage must be at least 187 volts (domestic) or 198 volts (export) at compressor terminals when Compressor is trying to start.
	I. Inoperable run capacitor, start capacitor, or relay.	I. Replace inoperable part.
	J. Inoperable compressor.	J. Replace compressor.
	K. Inoperable control board	K. Replace control board.
	L. Inoperable contactor	L. Replace contactor.

Trouble	Probable Cause	Remedy
COMPRESSOR DOES NOT OPERATE (CONT D).	M. No voltage to control board.	M. Check for loose or broken wiring. Check 208/240 VAC power transformer for 24 VAC output. (see NOTE below).
	N. Inoperable control board or water/ice sensor PC board.	N. Replace control board.
	O. Inoperable ICE SENSOR.	O. Replace ICE SENSOR.
	P. EVAP IN, COND OUT, or EVAP OUT sensor is open, shorted, or out of temperature range.	P. Replace inoperable sensor.
	Q. Hydro Boost WATER SENSOR is shorted or open circuit.	Q. Check for loose, broken, or disconnected wire or plug at pre-cool coil. Repairor replace wire or secure plug. If Hydro Boost WATER SENSOR is inoperable, replace sensor.

NOTE: Confirm which sensor has failed by using the Aurora® Series System Analyzer (P/N 309197000).

NOTE: The 208/240 VAC power transformer has an overload reset button located on its 24 VAC output side. An overload on the transformer will cause its reset button to pop out disrupting the 24 VAC output to the main control board. Overload button must be pressed in to restore 24 VAC output.

COMPRESSOR OPERATES CONTINUOUSLY BUT DOES NOT FORM SUFFICIENT ICE BANK.	A. Cooling capacity is exceeded by overdrawing.	A. Reduce amount of drinks drawn per given time.
	B. **Standard Cooling Unit with condenser coil and fan assembly**– Cooling Unit located in excessively hot area or air circulation through condenser coil is restricted.	B. Relocate unit or check and if necessary, condenser coil as instructed.
	C. **Remote Rooftop Condenser Coil and Fan Assembly**– Air circulation through condenser coil is restricted.	C. Check and if necessary, clean condenser coil as instructed.
	D. **Unit with Water-Cooled Refrigeration–**Water supply to the refrigeration cooling coil insufficient.	D. Restore water supply to the refrigeration cooling coil.
	E. Insufficient refrigerant charge.	E. Find and repair refrigeration leak, then replenish refrigerant charge.
	F. Inoperative or disconnected pulse-modulating expansion valve (see REFRIGERATION FLOW DIAGRAM).	F. Check that expansion valve is operating by touch (should be able to feel valve pulse). Check for loose or disconnected wire to solenoid coil. If necessary, troubleshoot expansion valve with a gage set to see if it is opening. If expansion valve is not opening, suction pressure will be close to or in a vacuum.

Trouble		Probable Cause		Remedy
COMPRESSOR OPERATES CONTINUOUSLY BUT DOES NOT FORM SUFFICIENT ICE BANK (CONT'D)	G.	Inoperative control board. No output from board to solenoids.	G.	Check LED's on control board to see if they are modulating. Check for 24V output to pulse modulating expansion valve (see WIRING DIAGRAM). If control board green LED is on and yellow LED Is flashing; but no 24V output, replace board.
CONDENSER FAN MOTOR NOT OPERATING	A.	Blown power circuit fuse.	A.	Replace power circuit fuse.
	B.	Fan blade obstructed.	B.	Remove obstruction.
	C.	Inoperative condenser fan motor.	C.	Replace condenser fan motor.
	D.	Compressor contactor inoperable.	D.	Replace compressor contactor.
AGITATOR MOTOR NOT OPERATING.	A.	Agitator motor propeller obstructed.	A.	Remove obstruction.
	B.	Low voltage.	B.	Voltage must be at least 187 volts (domestic) or 198 volts (export) at compressor terminals when compressor is trying to start.
	C.	Loose, disconnected, or broken wiring.	C.	Tighten connections or replace broken wiring.
	D.	Inoperative agitator motor.	D.	Replace agitator motor.

WARRANTY

IMI Cornelius Inc. warrants that all equipment and parts are free from defects in material and workmanship under normal use and service. For a copy of the warranty applicable to your Cornelius, Remcor or Wilshire product, in your country, please write, fax or telephone the IMI Cornelius office nearest you. Please provide the equipment model number, serial number and the date of purchase.

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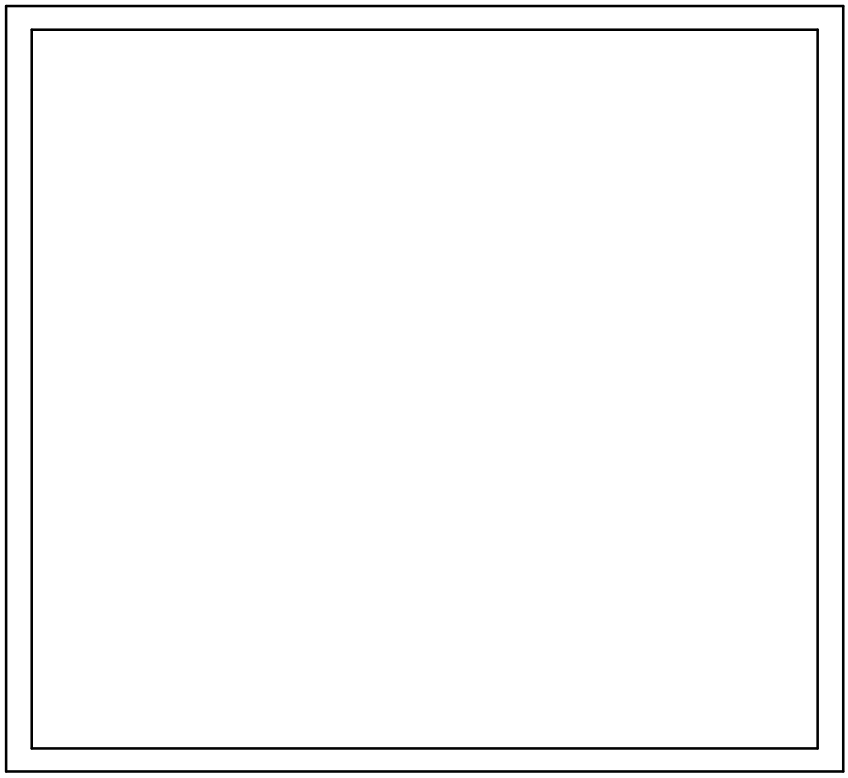

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